LIBRARY

Walter E. Fernald
State School

Waverley, Massachusetts

No. 202-14

121

UNIVERSITY OF IOWA STUDIES
IN CHILD WELFARE

PROFESSOR BIRD T. BALDWIN, PH. D., EDITOR

FROM THE IOWA CHILD WELFARE RESEARCH STATION

VOLUME I NUMBER 7

SELECTIVE MIGRATION AS A FACTOR IN CHILD WELFARE IN THE UNITED STATES
WITH SPECIAL REFERENCE TO IOWA

BY

HORNELL NORRIS HART
Research Associate

PUBLISHED BY THE UNIVERSITY, IOWA CITY

STUDIES IN CHILD WELFARE

		Pages
1.	*The Psysical Growth of Children from Birth to Maturity*, by BIRD T. BALDWIN, Research Professor of Educational Psychology and Director, Iowa Child Welfare Research Station.	411
2.	*A Survey of Musical Talent in the Public Schools*, by CARL E. SEASHORE, Head of the Department of of Philosophy and Psychology and Dean of the Graduate College.	36
3.	*A Preliminary Study in Corrective Speech*, by SARA M. STINCHFIELD, Assistant in Speech Training.	36
4.	*An Analytic Study of a Group of Five and Six-Year-Old Children*, by CLARA H. TOWN, Research Associate.	87
5.	*Investigations in the Artificial Feeding of Children* (reprints) by AMY L. DANIELS, Research Professor of Nutrition, ALBERT H. BYFIELD, Professor of Pediatrics, and ROSEMARY LOUGHLIN, Assistant in Nutrition.	36
6.	*Child Legislation in Iowa*, by FRANK E. HORACK, Professor of Political Science.	36
7.	*Selective Migration as a Factor in Child Welfare in the United States, with Special Reference to Iowa*, by HORNELL N. HART, Research Associate.	137
8.	*The Mental Growth Curve of Normal and Superior Children.* (Studied by Means of Consecutive Intelligence Examinations) by BIRD T. BALDWIN, and LORLE I. STECHER.	36

BULLETINS ON THE AIMS AND PROGRESS OF RESEARCH (IN CHILD WELFARE)

A Child Welfare Research Station, by CARL E. SEASHORE, PH. D.
Vocational Guidance in Music, by CARL E. SEASHORE, PH. D.
Administration and Scope of the Iowa Child Welfare Research Station.

UNIVERSITY EXTENSION BULLETINS BY MEMBERS OF RESEARCH STATION STAFF

57. *Diet for the School Child*, by AMY L. DANIELS
59. *The Physical Growth of the School Child*, by BIRD T. BALDWIN
65. *Feeding the Baby*, by AMY L. DANIELS, and ALBERT H. BYFIELD
70. *School Lunches*, by AMY L. DANIELS (in press).
Diet Card, by the staff (in press)

The Studies in Child Welfare are listed at moderate prices, but are sent free on request to persons who are actively engaged in child welfare work in the state. The Bulletins on the Aims and Progress of Research in Child Welfare may be obtained free of charge from the Librarian of the University. Extension Division Bulletins may be secured free of charge upon application to the University of Iowa Extension Division.

CONTENTS

FOREWORD 7

I. CHILD WELFARE AND SELECTIVE MIGRATION 9

1. The parent as a factor in child welfare 9
2. Migration and the quality of parents 10

II. THE EXTENT OF MIGRATION IN THE UNITED STATES; AGE, COLOR, AND NATIVITY 11

3. The extent of migratory movements in the settlement of the United States 11
Chart 1. The movement of the frontier across the United States 11
4. The extent of recent migration 12
5. Past methods of measuring migration 12
Table 1. Migratory make-up of the population of the United States 13
6. The age-distribution method 14
Essential theory 14
Method of securing classified age distribution 15
Methods of securing corrected classified death rates by ages 16
Table 2. Chronological changes in death rates 17
Estimated margin of error 18
Table 3. Estimated survival rates 19
Estimation of migration 20
Table 4. Method of estimating migration 20
8. Migration in the United States, 1890-1910 21
General summary 21
Check against census data on foreign immigration 21
Table 5. Summary of United States Migration 1890-1910 ..... 22, 23
Migration and natural increase as factors in rural and urban growth 24
Table 6. Sources of urban and rural population growth 25
Table 7. Foreign immigration and native migration ... 26
Table 8. Various findings as to sorucecs of city growth 27
Reporting of colored persons as white and of foreign-born as native-born 28
Table 9. Proof of incorrect color or nativity reports ... 29
Age distribution of migrants 31
Table 10. Percentage age distribution of migrants 32
Chart 2. United States migration by ages 34

Chart 3. Rural migration by ages..... 35
Chart 4. Urban migration by ages..... 35
Migration by divisions..... 36
Table 11. Migration by divisions, in thousands...36, 37, 38
The rural exodus..... 39
Table 12. Sources of the rural exodus..... 39
Table 13. Destinations of the rural exodus..... 40
Table 14. Rural migration rates..... 42
8. Conclusions from Chapter II..... 43

III. Characteristics of Native Migrants in the United States.. 45

9. Statistical evidence as to characteristics of migrants..... 45
Fecundity of the pioneers..... 45
Chart 5. Density-fecundity correlation graph, 1830.... 46
Fecundity and recent migration..... 48
Table 15. Recent migration and fecundity..... 49
Height 50
Contributions of Civil War troops..... 51
Table 16. Troops provided in the Civil War by newly settled states as compared with older communities... 52
Chart 6. Contributions of Civil War troops and recency of settlement..... 53
Divorce and interstate migration..... 54
Homicide and interstate migration..... 55
Literacy and school attendance..... 55
Journalists and lawyers among interstate migrants..... 56
The production of distinguished individuals and interstate migration 57
Table 17. Production of distinguished persons and recency of settlement, 1855-64..... 58
Table 18. Production of distinguished persons in urban and rural sections of the New England and West North Central States..... 60
Table 19. Production of distinguished persons in relation to prevalence of cultural occupations..... 62
Summary of conclusions from Section 9..... 65
10. The character of the pioneer as described by observers... 65
Table 20. Characteristics of interstate migrants as indicated by correlations..... 64
11. Energy as a fundamental characteristic of the pioneer.... 66
12. The origin of the pioneer character..... 67
Race as an explanation of pioneer energy..... 67
Youth as an explanation of pioneer energy..... 68
Table 21 and Chart 7. Age and sex distribution at the frontier and elsewhere in 1850.....69, 70
The frontier environment as a molding force..... 70
The selective character of migration to the frontier..... 73
Expulsive selection..... 74
Attractive selection..... 75

Winnowing selection..... 77
Table 22. Settling of the far west by the mid west..... 78
13. Selection in recent migrations..... 79
A priori analysis of reasons for the selectivity of recent migrations 79
Opinions of other observers..... 80
Further possible methods for scientific determination of whether recent migration is selective..... 81
14. The influence of migratory selection on child welfare.... 83
The inheritance of energetic characteristics..... 83
Significance of the fecundity of the pioneers..... 86
Pioneer characteristics in relation to desirability in a parent 87
Child welfare in rural New England..... 87
The feebly motivated..... 89
Child welfare and the ultra-frontier..... 89
The advantages and dangers of pioneer energy..... 92
15. Summary of conclusions from Chapter III..... 93

IV. Selective Migration in Iowa..... 95
16. The measurements of recent migrations in Iowa..... 95
Death rates..... 95
Table 23 and Chart 8. Iowa death rates by ages.....96, 97
State vs. federal census totals..... 98
Table 24. Federal, state and school census returns compared 98
Chart 9. State, federal and school censuses compared.. 99
Age distribution.....100
Table 25. Fluctuations in reported proportions of children 100
Table 26. Age distribution of the population of Iowa...101
17. Estimated amounts of emigration and immigration.....103
Foreign-born migration.....103
Table 28. Nationalities on the increase among Iowa foreigners 103
Table 27. Iowa net migration.....102
Table 29. Foreign immigration to Iowa.....104
Migration from other states.....105
Table 30. The balance of migration in Iowa.....106
Table 31. Migration from other states to Iowa.....106
Chart 10 and Table 32. Sources of recent native migration to Iowa 1900-1915.....107
Table 33. Summary of nativities of Iowa migrants.....108
Table 34. Iowa population gains and losses, 1900-1920..108
Emigration from Iowa and from New England.....109
Table 35. The Exodus from Iowa and from New England 109
Table 36. New native blood in Iowa and New England..109
18. Age and sex distribution of migrants.....111

Chart 11. Iowa and New England migrations compared 110
Table 37. Iowa migrants by nativities, ages and sexes..112
Chart 12. Age distribution of Iowa migrants 1900-1915 113
19. Destination of Iowa emigrants.....113
Chart 13. Sex distributions by ages of emigrants from Iowa 114
Table 38. Destination of Iowa emigrants.....115
Chart 14. Chief destinations of Iowa emigrants, 1900-1910 117
20. The current to the cities..... 117
Table 39. Rural and urban populations in Iowa.....118
Table 40. Migration to the six largest cities of Iowa...118
Chart 15. Age distribution of migrants to Iowa cities 119
Chart 16. Sex distribution of migrants to Iowa cities..120
21. Fecundity and migration in Iowa.....121
Table 41. Fecundity indices in Iowa, the West North Central States and the United States.....122
Chart 17. Decrease in the relative number of children in Iowa.....122
Table 42. Rural-urban and nativity contrasts in fecundity indices.....123
Table 43. Rural and urban fecundity in Iowa in 1915..124
Table 44. Percentages of Iowa women of various ages married 1890-1915.....125
22. Other characteristics of Iowa settlers.....125
Table 45. Early sources of Iowa population.....126
23. Selective character of emigration from Iowa.....127
24. Summary of conclusions from chapter IV.....127
V. Conclusions and Recommendations.....129
References cited.....131

FOREWORD

This investigation directs attention primarily to the movements of population which produce fundamental modifications in parent stock with resultant effects on *child welfare*. The *Study* is a condensed form of a dissertation presented by the author in partial fulfillment of the requirements for the degree of Doctor of Philosophy in Child Welfare. In his work under my direction Dr. Hart has had the coöperation of Associate Professor Clarence M. Case of the Department of Sociology, and Professor Henry L. Rietz, Head of the Department of Mathematics.

There is an increasing recognition of the fact that rural communities in the East have become to a considerable extent decadent. A similar situation is found in Ohio and Indiana and other sections of the Middle West. Sociologists have ascribed this situation to the type of migration which has been going on from these states. The present investigation aims to determine objectively the extent and significance of such migration in Iowa. In order to approach the problem from an empirical, scientific point of view, it was necessary to develop new methods of measuring migration, of determining fecundity, and of analyzing the predominant characteristics of migrants.

Two lines of action are recommended by the author: "The first is to seek to decrease the emigration by measures calculated to make rural Iowa attractive to the type of parents which it is desired to retain."

"A second line of action is the taking of measures calculated to counteract the dysgenic influence of emigration by a more rapid multiplication of desirable types of parents and less rapid multiplication of the undesirables. Personally the author believes that this is the more hopeful course. Details as to measures under this head must wait for presentation until a later publication."

BIRD T. BALDWIN.

Office of the Director,
Iowa Child Welfare Research Station,
University of Iowa.

ACKNOWLEDGMENTS

In addition to the members of the University faculty who have given assistance in the preparation of this study acknowledgments are due to Professor Edward Alsworth Ross for the original suggestion of the study of the character of American pioneers (Chapter III), to Dr. Franklin Johnson, and to my father, Dr. Hastings H. Hart, for constructive criticisms, and to Miss Ione Bliss for assistance with references.

I. CHILD WELFARE AND SELECTIVE MIGRATION

1. THE PARENT AS A FACTOR IN CHILD WELFARE

Interstate migration of a selective character is occurring in the United States on so vast a scale as to menace such communities as the rural districts of Iowa with serious deterioration in the quality of the parenthood of future generations. The present inquiry is devoted to the development of this thesis.

As a matter of classification, the elements entering into the welfare of children may be grouped under two heads: first the factors which the parents transmit, control or select; and second the factors which are determined independently of the parents. Under the first head come the factors determined in the germ plasm, the factors determined by the prenatal environment, and the factors in the early postnatal environment controlled or selected by the parents. In addition to these there must be considered under this head the factors in the juvenile environment subject wholly or in part to control by the parents collectively, such as the quality of the school system. Under the head of factors determined independently of the parents must be grouped, for a given community, environmental elements such as the available natural resources, the climate, the cost of the necessities of life, the general level of wages, and the like. A large proportion of the juvenile environment lies in the twilight zone between control by the parents and independence of the parents. Housing conditions and the quality of available recreation are illustrations. The present inquiry is concerned only with factors in child welfare which are transmitted, controlled or selected, wholly or in part, by the parents individually or collectively—which, in other words, depend wholly or in part upon the quality of the parents. Obviously those aspects are highly important, including as they do not only all hereditary factors, but also an important portion of the environment.

2. MIGRATION AND THE QUALITY OF PARENTS

The field of inquiry of the present study is restricted still further. The quality of the parenthood of the children in a given area is determined by factors which may be classified as follows: the characteristics of the original potential parents who settled the area; the extent and character of subsequent migration of potential parents into and out of the area; the influence of the local environment, physical and social, upon the settlers in the area; and the relative rates at which various types of potential parents in the area bear and rear children. The present inquiry is concerned primarily with the influence of migration upon the character of the parenthood in the United States with special reference to Iowa. Secondarily, in a negative way, the inquiry is concerned with the influence of local environments upon migrants as an alternative to migratory selection in explaining the characteristics of early settlers. With the relative rates at which various types of potential parents bear and rear children the present study is concerned only in respect to the fecundity of migrants as compared with non-migrants. The general question of the correlation between fecundity and parental desirability must be considered in a separate study.

II. THE EXTENT OF MIGRATION IN THE UNITED STATES; AGE, COLOR AND NATIVITY

3. THE EXTENT OF MIGRATORY MOVEMENTS IN THE SETTLEMENT OF THE UNITED STATES

Since 1776 over 33,600,000 persons born in other countries have migrated into the United States, (*114-128*). The progress of the settlement of the United States is shown in Chart I. This map presents, at the twenty-year intervals indicated, the outlying boundaries between the areas having over two persons per square mile, and the areas having a lower density. In 1790, it will be noted, only the section east of the Alleghany Mountains had a

CHART 1

THE MOVEMENT OF THE FRONTIER ACROSS THE UNITED STATES

Zones in which the density of population increased from less than two persons per square mile to more than that number in each of the 20-year periods from 1790-1910. For the sake of simplicity unsettled sections which were entirely surrounded by settled sections are considered as being settled. Areas settled in 1890 and depopulated before 1910 are not shaded. Sources of data *120* opposite pp. xii, xiv, xvi, xix; *125* opposite p. 2; *122* plate viii.

population of two or more persons per square mile. The rest of the United States, except for an area in the Ohio Valley, was practically unsettled. By 1810 the pioneers had pushed the frontier to the shores of Lake Huron and Lake Erie, had advanced down the Ohio Valley part way through Tennessee, and had begun to move up the Mississippi from its mouth. In 1830 the settlers had occupied the eastern part of the Mississippi Valley and had pushed pseudopodia of population up various branches of the Mississippi. Florida and certain sections on the gulf where still unsettled. The 1850 frontier had advanced further up the rivers. In 1870, in addition to a continuation of the advance up the tributaries of the Mississippi, the settlement of California had begun, and a settlement had been made in the mountains of the south-west. By 1890 the frontier had been advanced on all fronts, and a settled area had started in Utah. In 1910 the unsettled regions consisted chiefly of desert and mountain land.

4. THE EXTENT OF RECENT MIGRATION

It is ordinarily assumed that native migration is a factor of diminishing importance in the United States. It is startling, therefore, to note that in 1910, (*125*, p. 689) over one-fifth of the native-born persons in the United States were natives of other states than those in which they were living. This percentage is greater than in 1900 or 1890, and practically as large as in 1870 and 1880. The *number* of native-born persons living in states other than the states of their birth was more than twice as large in 1910 as in 1870. The extent of migration as a factor in the make-up of population in recent years is suggested by Table 1.

5. PAST METHODS OF MEASURING MIGRATION

In view of the vast extent of migration, and in view of its possibly profound effects upon the character of the parenthood of future generations it is important to have some means of measuring accurately the numbers of persons of various ages and nativities who are migrating out of and into various sections of the United States. Three different methods have been used chiefly in the past for measuring or indicating the extent of migration. The first utilizes gross increases and decreases in population. (As examples see *137* and *142*). This measure is unreliable because not only migration but also death and birth rates help to deter-

TABLE 1

MIGRATORY MAKE-UP OF THE POPULATION OF THE UNITED STATES

1870-1910

Sources of data *125*, pp. 129, 689

Census	Total population (includes birth place unknown)		Born in state of residence	
	Number	Per cent	Number	Per cent
1910	91,972,266	100.0	61,185,305	66.5
1900	75,994,575	100.0	51,901,722	68.3
1890	62,947,714	100.0	41,871,611	66.5
1880	50,155,783	100.0	33,882,734	67.5
1870	38,558,371	100.0	25,321,340	65.6
Census	Born in other parts of the United States		Foreign-born	
	Number	Per cent	Number	Per cent
1910	16,910,114	18.4	13,515,886	14.7
1900	13,501,045	17.8	10,341,276	13.6
1890	11,094,108	17.6	9,249,560	14.7
1880	9,592,764	19.1	6,679,943	13.3
1870	7,657,320	19.9	5,567,229	14.4

mine population changes. A locality may be increasing in population in spite of a large amount of emigration, and it may be decreasing in spite of immigration. A second method is the direct enumeration of migrants, including the two sub-methods of enumerating immigrants and emigrants at national frontiers, and of enumerating persons at census periods according to place of birth and date of migration. Both of these sub-methods are in use in the United States. (*125* pp. 689, 1017f; *128*; See also *148*). Enumeration at frontiers gives no reliable indication of the ultimate destination of the immigrant within the country, and gives no data as to the number of migrants surviving at a given date. Census enumerations of foreign immigrants afford no method of telling how many foreigners who were in the country before the preceding census left the United States later. Census enumerations of natives by states of birth are not classified according to age, and do not give the dates at which migration occurred. The third general method of measuring migration is to subtract from the increase in population of a given territory during a given period the natural increase, that is the excess of births over deaths during the period. (*134*; *138*; *139*; *145*). The difficulties in applying this method to the United States are that it involves very complicated estimates of birth and death rates, and that it does not show the age distribution of the migrants.

6. THE AGE-DISTRIBUTION METHOD

ESSENTIAL THEORY

The method evolved by the present writer for measuring migration requires as its only materials accurate data as to the age distribution at successive censuses of the groups to be studied and as to their death rates by ages. No data as to birth rates, foreign immigration, emigration, and the numerous details related to them are required. The results achieved by this method have the additional advantage of indicating the age distribution of the migrants.

The method is based upon the following definitions. A resident of a community, for the purposes of this study, is an individual subject to census enumeration as a unit of the population of that community. A migrant into a community is any individual who becomes a resident of that community in any other way than by being born in it. A migrant out of a community is any individual who has been a resident and who ceases to be a resident in any other way than dying in it. It follows from these definitions that if the number of residents of a given age in a given community at a given date be known, and if it can be accurately estimated how many of these residents died during the next 10 years, and how many persons there were in this same community 10 years later who were 10 years older than this group was at the first date, it is simply a matter of addition and subtraction to determine the net surviving migration, during the 10 year period, of individuals in this age group. For the sake of simplicity the number of surviving migrants is calculated instead of the total number of migrants; that is to say, not only the individuals who died in their original place of residence, but also the individuals who died before the next census in communities to which they had migrated are eliminated in the calculations. The principle may be put into algebraic terms as follows:

Let a = the date of a given census.
Let b = the date of the succeeding census.
Let p_a = the number of individuals in a given age group as reported in census a.
Let p_b = the number of individuals of ages (b-a) years greater than the p_a group, as reported in census b.
Let d = the number of deaths among the p_a individuals during the interval between the censuses.

Then, $p_a - d$ = the number of individuals who would survive out of the p_a group at the time census b was taken.

And $p_b - (p_a - d) = p_b - p_a + d$ = the net number of migrants of this age group into the territory during the interval between the two censuses.

It is the method thus formulated which is applied throughout this study in measuring migration. In order to determine the influence of foreign immigration by this method the foreign-born are simply treated as a separate group. Similarly negro migration is measured independently of white, and native whites of native parents are considered separately from native whites of foreign parents. In order to study migration between rural and urban districts, the districts are considered separately. In order to determine the extent of native emigration from the United States, the same method is applied to native whites and negroes for the country as a whole.

Method of Securing Classified Age Distribution

For the purposes of the present investigation the source which supplies the most suitable data as to age distribution is Table 48 in Volume I of the 1910 census, entitled "Distribution by Broad Age Periods of the Combined Population in Cities of the Specified Classes, By Divisions: 1910, 1900, and 1890." (*125* pp. 432-436). Unfortunately this table, because of deficiencies in the 1890 census, does not separate cities under 25,000 from rural territory, but this defect seems unavoidable if comparable data for the two decades are to be secured. The table is defective for the present purposes in two other respects, for which corrections have been made: first, the table classifies persons over 24 years of age into 20 year groups, whereas for the present purpose the returns had to be subdivided by interpolation into 10 year groupings; second, the table gives the returns for cities of the various classes according to the status of those cities at each census, so that it was necessary to subtract from the urban totals at the end of the decade the population of cities which passed the 25,000 line between censuses, and to add these amounts to the rural totals. Similar corrections are necessary between the group of small cities and that of large.

The data used exclude Chinese, Japanese, and Indians and their migrations have not been measured in this study.

Methods of Securing Corrected Classified Death Rates by Ages

The most authoritative source of information as to death rates by ages for the groups involved is contained in Glover's *United States Life Tables* prepared for the Bureau of the Census (*106*). These tables give death rates by ages in 1910 for urban whites, rural whites, and negroes. It would not be accurate to assume, however, that the death rates of urban whites at a given age are valid for both foreign-born and native-born whites of the same ages in cities, or to assume that death rates for negroes in general are equally valid for rural and for urban negroes, or to assume that death rates for 1910 are valid for the decades 1890-1900 and 1900-1910.

Death rates for 1900 by age groups, general nativity and color groups for registration cities, and for rural portions of registration states, are published in the 1900 census. (*124*). These death rates are by 10 year groups except for the ages 45 to 64, and 65 and over. This necessitates interpolation in the groups 45 years and over.

The 1900 death rates, with interpolations after the age of 45, would be exactly the material needed if it were not for chronological changes and if it were certain that the registration areas involved were typical of the corresponding areas in the country as a whole and in the several divisions. On the latter point, it should be noted that "cities of the registration area" included in 1900 all cities of over 8,000 population. The combined rates for such cities by age, nativity, and color groups differ more or less from the true rates for corresponding groups in cities of over 100,000 and in cities of 25,000 to 100,000. It has been assumed, however, that for the present purposes these differences are negligible. It should also be noted that the "rural" rates based on registration area data represent a much larger proportion of towns and villages of less than 8,000 than the rural area of the country as a whole, and on he other hand exclude cities of 8,000 to 25,000 which are included in the rural area in the age distribution figures used in the present study.

For correction of the chronological error only incomplete data are at hand. Death rates by ages for the registration area as a whole are quoted for 1890 in the 1900 census volume on vital

statistics. (*124*). The best procedure seems to be to assume that the desired rate for the 1890 to 1900 decade is the average between the 1890 and the 1900 rates, and to assume that all the white rates changed in the same ratio as the rates for corresponding ages in the registration area as a whole. For 1900 to 1910 it is possible to ascertain changes for urban whites, rural whites, and negroes separately, and it has been assumed that these changes, by ages, hold true for subdivisions of these groups. Among the negroes it appears that the death rate increased markedly between 1900 and 1910, while death rates for other groups showed consistent decreases in all except the older age groups. It seems probable, therefore, that the negro death rate was increasing rather than decreasing between 1890 and 1900, and this assumption has been made.

Some idea as to the validity of the above assumption of parallelism in the chronological changes in death rates for various groups may be gained from Table 2 which indicates that while the rural and urban death rates had the same general downward trend, the

TABLE 2

CHRONOLOGICAL CHANGES IN DEATH RATES

Percentages which the averages of the 1900 and 1910 death rates constituted of the 1900 rates, and which the 1900 rates constituted of the average of the 1900 and 1890 death rates, by ages, color, and residence groups. Based on data from *106* and *124*.

Ages	Registration Area, 1890-1900	Whites, registration cities 1900-1910	Whites, rural sections of registration states 1900-1910	Negroes, registration states 1900-1910
5-14	.87	.87	.84	.84
15-24	.94	.96	.88	1.06
25-34	.93	.89	.93	1.12
35-44	.94	.94	.99	1.13
45-54	.98			
55-64	1.02			
45-64		.96	1.03	1.10
65-74	1.06			
75-84	1.05			
85-94	1.10			
95-	1.09			
65-		.95	1.11	.98

rural rate decreased more rapidly in the early ages and actually increased in the later ages, while the urban rate showed a decrease in all age groups. The changes for the earlied decade seem to have been similar to those of the later one. The negro rates were in general increasing, especially in middle life.

In the application of the method for determining migration it is found to be more convenient to apply survival rates rather than death rates. The survival rate is unity minus the death rate; for example, if the death rate is one percent per year, the survival rate is 99 percent. A 10 year survival rate is the product of the 10 successive annual rates. The logarithm of the 10 year survival rate would therefore be the sum of the logarithms of the rates for the 10 individual years. In view of the proximate nature of the calculations for these minor corrections it was deemed sufficient to plot graphically the curve of the logarithms of the survival rates, and to approximate from the curve the logarithms of the 10 year survival rates. Parenthetically it should be observed that the intercensal period 1900 to 1910 was a month and a half less than 10 years, but no attempt was made to allow for this relatively insignificant factor. It would mean a decrease of a little over one percent in the number of deaths. The survival rates for different dates and groups, as calculated by the method above described are shown in Table 3. The rates designated "Glover—10 year groups" were derived by finding the sum of the males and females of the age, color, and residence specified, given in Glover's tables as population living at the specified ages, and using this total as a divisor with the corresponding total of the same description except for being 10 years older, as a dividend. This method involves a slight error due to the difference between the age distribution within the 10 year groups of actual populations and of the theoretical stationary populations assumed by Glover. As an experiment this distribution error was corrected in the age groups over 54 in the rural whites, and in one age group of urban whites, by weighting the 10 year survival rates for individual years of age as derived from Glover with the approximate age distribution by individual years of the actual populations involved. The results are designated in the table as "Glover—by single years."

Estimated Margin of Error

In appraising the results of the applications of the above

TABLE 3

Estimated Survival Rates

Ten year survivals per 1000, as calculated with chronological corrections, from 1900 census data (*124*), and as derived directly from Glover's 1910 United States Life Tables (*106*, pp. 26-29, 38-45)

Ages at beginnings of decades	5-14	15-24	25-34	35-44	45-54	55-64	65-74	75-84
Rural Whites								
Native-born								
Of native parents								
1895	955	939	929	911	861	708	458	221
1905	965	947	933	923	851	719	456	168
Of foreign parents								
1895	953	931	912	902	876	725	404	103
1905	964	942	923	904	865	725	408	150
Foreign-born								
1895	951	942	928	897	840	703	442	204
1905	964	951	934	901	830	690	440	163
Glover								
10-year groups	972	951	940	929	862	715	448	170
By single years	...	...	...	...	...	719	456	169
Urban Whites								
Native-born								
Of native parents								
1895	945	931	913	884	809	661	356	68
1905	953	940	926	890	822	689	436	122
Of foreign parents								
1895	945	912	872	853	800	644	355	84
1905	952	922	892	858	798	692	413	95
Foreign-born								
1895	950	928	895	846	750	596	353	86
1905	957	930	911	859	759	596	353	86
Glover								
10-year groups	970	949	918	876	785	614	384	157
By single years	...	...	...	...	790	...	...	...
Negroes								
Rural 1895	930	926	913	881	800	617	469	372
1905	936	912	892	851	777	612	482	374
Urban 1895	871	853	841	785	637	495	309	207
1905	878	830	805	743	635	471	369	262
Glover								
10-year groups	923	889	852	796	691	542	374	198

described method to the estimation of the extent of migration it is important to have some basis for determining the amount of error likely to be involved in the assumptions made. The reliability of the calculations is dependent upon the accuracy of the original census returns and of the reports as to deaths in the registration area, and upon the soundness of the following assumptions: that the death rates of the registration area, corrected for age, nativity, and urban-rural distribution, are representative of the death rates for the country as a whole; and that the chronological changes

correspond with those assumed on pages 17, and following. The factors involved are too complicated to permit the mathematical calculation of the probable errors, but in general the writer believes that is as likely as not that an average error of approximately five percent is involved in the estimates of migration. The error is probably greater in the decade in 1890-1900 than in the decade 1900-1910. It is probably greater in the estimates of migrations of native whites of native parentage and of negroes in rural districts than in other groups. The estimates of the migrations of the foreign-born are subject to smaller errors than those in the other groups. For no single nativity group as a whole, even in the earlier decade, is the probable error believed to be larger than 10 percent. As between the various age groups the percentage of error is likely to be smallest in the estimates for the ages at which the maximum migration occurred. These estimates for error do not cover the misreporting of nativities and race discussed on page 28. This misreporting affects the nativity distributions but not the totals for large cities, small cities or rural districts.

Estimation of Migration

The final step in the use of the method just described for measuring migration is the application of the survival rates to the various age groups, and the comparison of the number of survivors with the number of inhabitants of corresponding ages at the end of the decade. A sample of this process is presented in Table 4.

TABLE 4

Method of Estimating Migration

Estimation of migration by age groups of native white persons of native parentage into cities of the United States having in 1890 populations of over 100,000, during the decade 1890-1900. Based on data cited in previous tables, and in the text.

Ages in 1890	Population in 1890	Ten year survivals per 1000	Estimated number of survivors	Population in 1900	Migration
5-	2,374,713		2,077,252	2,383,689	306,437
5-14	597,621	945	564,752	744,314	179,562
15-24	533,934	931	497,093	634,584	137,491
25-34	475,494	913	434,126	427,900	—6,226
35-44	336,000	884	297,004	286,079	—10,925
45-54	215,442	809	174,293	173,114	—1,179
55-64	129,002	661	85,270	87,890	2,620
65-74	65,220	356	23,218	29,808	5,094
75-	22,000	68	1,496		

Persons under five years of age at the beginning of the decade are, in Table 4, as in preceding tables, omitted from the calculations. The reasons for this are three-fold: first, that the census returns of children under five years show irregularities in age distribution which may possibly indicate that the returns are less complete at these ages than in later years; second, that the death rates have such extreme variation during this period as to make difficult the accurate calculation of survival rates; and third, that it is questionable whether children migrating with their parents should not be considered as part of the natural increase rather than as part of the migration. It seems probable that further study of this age group may develop accurate methods of estimating migration of persons within it. For the foreign-born the very small number of children under five years of age eliminates the difficulty.

8. MIGRATION IN THE UNITED STATES. 1890-1910.

General Summary

The results of these calculations for the United States as a whole, (exclusive of outlying possessions) are summarized in Table 5. The results are stated in thousands because it is believed that the methods do not justify a pretense to accuracy beyond that point. Most of the calculations have been performed on a 10 inch slide rule, and hence accuracy cannot be claimed beyond the first three or four digits.

Check Against Census Data on Foreign Immigration

Before discussing the interpretation of the results summarized in Table 5 it is worth while to check its conclusions against certain independent data with which comparison is possible. The net addition to the population of the United States through immigragration of foreign whites is stated in the table as 2,653,000 in the first decade, and 4,957,000 in the second decade. The census returns of foreign-born whites residing in the United States on the date of the 1910 census who immigrated during the year 1901 to 1910 indicate 5,000,028 such persons (including a proportionate number of those for whom the year of immigration was not reported.) (*125* p. 1017) With an allowance for the immigration during the months of 1900 succeeding the census of that year, the corrected number becomes approximately 5,160,000. This number, however, does not represent the net gain in population

TABLE 5

Summary of United States Migration 1890-1910

Migration into and out of (-) the United States, and between large, cities, small cities, and rural territory, stated in thousands, for the decades 1890-1900 and 1900-1910, as estimated by the age distribution method from data referred to in previous tables, and in the text.

Nativity group	Ages at beginnings of decades	1890-1900				1900-1910			
		United States as a whole	Rural and cities under 25,000 in 1890	Cities 25,000-100,000 in 1890	Cities over 100,000 in 1890	United States as a whole	Rural and cities under 25,000 in 1900	Cities* 25,000-100,000 in 1900	2,586 Cities* over 100,000 in 1900
All nativities	Five years and over	1,300	—1,070	675	1,695	3,679	—376	1,469	
Foreign-born white	All ages	2,653	1,093	347	1,213	4,957	2,026	718	2,213
	-4	377	178	43	156	607	241	76	290
	5-14	869	356	116	397	1,666	656	235	775
	15-24	927	382	119	426	1,778	748	240	790
	25-34	308	103	43	162	618	281	88	249
	35-44	135	90	13	32	184	75	41	68
	45-54	—14	—40	6	20	12	—8	12	8
	55-64	32	20	3	9	54	17	15	22
	65-	19	4	4	11	38	16	11	11
Native white and negroes	Five and over	—976	—1,985	371	638	—671	—2,161	827	663
	5-14	90	—776	207	359	204	—578	379	403
	15-24	—782	—1,115	106	227	—577	—1,109	241	291
	25-34	—98	—188	29	61	—69	—155	88	—2
	35-44	—32	—11	5	—26	—33	—77	59	—15
	45-54	—201	—213	10	2	—217	—220	28	—25
	55-64	17	1	7	9	2	—21	20	3
	65-	30	17	7	6	19	—1	12	8

TABLE 5 (continued)

Nativity group	Ages at beginning of decades	1890-1900				1900-1910			
		United States as a whole	Rural and cities under 25,000 in 1890	Cities 25,000-100,000 in 1890	Cities over 100,000 in 1890	United States as a whole	Rural and cities under 25,000 in 1900	Cities* 25,000-100,000 in 1900	Cities* over 100,000 in 1900
Native white of native parentage	Five and and over	—893	—1,408	208	307	106	—986	593	499
	5-14	6	—294	121	179	298	—228	259	267
	15-24	—481	—690	71	138	—146	—547	178	223
	25-34	—171	—163	—2	—6	32	—45	63	14
	35-44	—89	—80	2	—11	—8	—48	42	—2
	45-54	—166	—172	7	—1	—107	—122	26	—11
	55-64	—11	—18	4	3	3	—14	15	2
	65-	19	9	5	5	34	18	10	6
Native white of foreign or mixed parentage	Five and and over	218	—69	95	192	—422	—500	87	—9
	5-14	105	—59	46	118	—47	—168	56	65
	15-24	—89	—139	13	37	—221	—220	10	—11
	25-34	106	23	31	52	—83	—50	7	—40
	35-44	52	75	—2	—21	—38	—33	9	—14
	45-54	15	9	4	2	—40	—32	2	—10
	55-64	16	10	2	4	—1	—2	2	—1
	65-	13	12	1	0	8	5	1	2
Negroes	Five and and over	—301	—508	68	139	—355	—675	147	173
	5-14	—21	—123	40	62	—47	—182	64	71
	15-24	—212	—286	22	52	—210	—342	53	79
	25-34	—33	—48	0	15	—18	—60	18	24
	35-44	5	—6	5	6	13	4	8	1
	45-54	—50	—50	—1	1	—70	—66	0	—4
	55-64	12	9	1	2	0	—5	3	2
	65-	—2	—4	1	1	—23	—24	1	0

* St. Joseph, Missouri, is included among the cities of 25,000 to 100,000, not among the cities of over 100,000.

due to foreign white migration during the decade, for it makes no allowance for the foreign-born whites who were resident in the United States in 1900 but who left during the decade and had not returned at the date of the 1910 census. There seems to be no reliable direct way of estimating how great the number of such persons may have been, but it is not at all incredible that it amounted to very nearly the difference between the estimate of net foreign-born white migration as given in Table 5, and the corrected census returns of foreign-born white persons living in the United States in 1910 who immigrated during the decade between the censuses, which difference was 203,000.

For the preceding decade the number of foreign-born whites living in the United States at the census of 1900 who immigrated during the preceding decade was about 2,775,000 according to census returns. (*125* p. 1017) This corresponds, with relatively about the same margin as in the second decade, to the estimate of 2,653,000 derived by the age-distribution method, as given in Table 5.

A less exact check is available with regard to the estimates of native emigration. The Canadian government returns the number of migrants from the United States to Canada during the years 1897-1913 as 923,148. (*108*) This would indicate an emigration to Canada during the decade 1900-1910 of about 540,000. The net emigration of native whites and negroes from the United States during the decade 1900-1910 as estimated by the age distribution method was 671,000. The reporting of foreign-born persons as natives (see page 28) probably means that the true number is much larger than this. The Canadian returns presumably are gross without allowance for natives of the United States returning to this country. The age distribution method, moreover, excludes emigrants who died before the 1910 census.

Migration and Natural Increase as Factors in Rural and Urban Growth

The highly concentrated character of Table 5 makes it desirable to abstract certain of its important aspects for detailed study. The significance of the general totals of migration, designated as "all nativities" in Table 5 is made clearer in Table 6 by showing what percentage these migrations constituted of the average populations involved, and how important the migrations

were as compared with natural increase, including as natural increase all sources of increase other than migration of persons over five years old at the beginning of the decades.

Table 6 indicates the following facts. During the decade 1890

TABLE 6

SOURCES OF URBAN AND RURAL POPULATION GROWTH

Increases in population in urban and rural districts, separated into migration of persons five years of age or over at the beginnings of the decades, and natural increases, showing the percentages which the gains constituted of the average populations of the respective areas. 1890-1910. Absolute numbers stated in thousands. Based on Table 5 and its supporting data.

	United States as a whole		Rural territory and small cities		Cities of 25,000 to 100,000 at beginnings of decades		Cities of over 100,000 at beginnings of decades	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
1890-1900								
Average population	69,116	100.0	52,841	100.0	4,959	100.0	11,316	100.0
Net increase	13,054	18.9	8,470	16.0	1,284	25.9	3,300	29.1
Migration	1,300	1.9	—1,070	—2.0	675	13.6	1,695	14.9
Natural increase	11,754	17.0	9,540	18.0	609	12.3	1,605	14.2
1900-1910								
Average population	83,606	100.0	60,577	100.0	6,789	100.0	16,240	100.0
Net increase	15,912	19.0	9,268	15.3	2,320	34.2	4,324	26.6
Migration	3,679	4.4	—376	—.6	1,469	21.6	2,586	15.9
Natural increase	12,233	14.6	9,644	15.9	851	12.5	1,738	10.7

to 1900 the population of the United States increased about 19 percent of the average during the decade. Of this increase, 17.0 percent was due to natural increase (as defined above) and only 1.9 percent was due to the excess of immigration over emigration. During the decade 1900 to 1910 the total percentage increase was practically the same as 10 years previous, but natural increase amounted to only 14.6 percent of the average population, while net migration added 4.4 percent. Rural districts and small urban centers increased less rapidly than the larger cities, but this was due to net losses through emigration which offset part of the large natural increase. In 1890 to 1900 the rural districts had a natural increase half again as large as that of the medium sized cities, and over one-fourth larger than that of the large cities. The cities secured more than half of their growth from net migration, and less than half from natural increase, even interpreting natural increase in the broad sense used herein.

The urban and rural districts show striking changes in the

second decade. Natural increase fell off sharply in the rural districts and in the cities over 100,000, but remained about stationary in the medium sized cities. The percentage loss to rural districts and small cities from net migration *decreased* to less than one percent. Net migration gains in medium sized cities shot up from 13.6 to 21.6 percent, giving this group a considerable lead over the large cities in rate of population increase. Large cities during this decade had a larger increase from migration than 10 years previously, but this was offset by the great drop in natural increase.

In considering migratory losses and gains it is important, of course, to distinguish foreign-born from native-born migration. A summary on this point is presented in Table 7.

TABLE 7

Foreign Immigration and Native Migration

Migratory gains and losses (-) in thousands in urban and rural districts of the United States, according to general nativities of the migrants, 1890-1910. Data derived from Table 5.

Nativity	1890-1900				1900-1910			
	United States	Rural	Med'm cities	Large cities	United States	Rural	Medi'm cities	Large cities
Both groups	1,300	—1,070	675	1,695	3,679	—376	1,469	2,586
Foreign white*	2,276	915	304	1,057	4,350	1,785	642	1,923
Native white and negro	—976	—1,985	371	638	—671	—2,161	827	663

* For the sake of comparability between the two groups, migration of foreign whites in this table excludes those immigrants who were less than five years old at the beginnings of the decades.

Foreign white immigration increased between the two decades, according to this table, by over two million. Emigration of natives from the United States, on the other hand, decreased about 300,000.

Rural districts and small cities gained, during the first decade, over 900,000 foreign immigrants, and lost nearly 2,000,000 native emigrants. In the second decade the amount of foreign immigration to rural districts and small cities was nearly doubled, reaching about 1,800,000. Migration of natives from rural districts increased however, only about 10 per cent in the 10 years. In medium sized cities, gains from native migration were greater in both decades than gains from foreign immigration. Gains from each of the two sources more than doubled between the decades. Large cities, however, got only a little over a third of their net

immigration from natives of the United States in the first decade, and less than one-fourth in the second decade. It should be noted that, of the natives who migrated from the rural districts in the first decade, over half emigrated from the United States, while of those in the second decade only about one-sixth emigrated.

The above conclusions with regard to the relative importance of foreign immigration and rural migration in building up the cities may be compared roughly with the conclusions of Clark, (*134*), and Gillette, (*138*), arrived at by use of the total-increase-minus-natural-increase method. Eliminating Gillette's allowance for incorporation, (a factor which the other studies take account of by other methods) the percentages of the total urban increase assigned by the two previous studies and by the present study to natural increase, foreign immigration, and rural migration, are as tabulated in Table 8.

TABLE 8

VARIOUS FINDINGS AS TO SOURCES OF CITY GROWTH

Percentages which natural increase, foreign immigration, and rural migration constituted of urban increase (exclusive of gains through "incorporation") from 1900 to 1910 according to Gillette (*139*) Clark (*134*) and the present writer (Table 5)

Sources of increase	Gillette: incorporated places over 2,500	Clark: incorporated places over 2,500	The present writer	
			Cities of 25,000 to 100,000	Cities of over 100,000
Natural increase	22.3	27.3	33.4	33.5
Foreign immigration	44.4	30.0 to 37.1	30.9	51.2
Under four years, 1900			3.2	6.7
Over four in 1900			27.7	44.5
Rural migration	33.3	42.7 to 35.6	35.7	15.3
Total increase	100.0	100.0	100.0	100.0

The data in this table are, of course, not exactly comparable. Natural increase, according to Clark, is the excess of all births over all deaths. According to Gillette's method, natural increase comprises only the excess of births over deaths in the original population. In the writer's estimates as given in earlier tables natural increase has included some children born before they migrated. In order to minimize this factor of difference in Table 8, the immigrating children of foreign immigrants have been included as migrants. No estimate of the number of young chil-

dren of native migrants has been made, but in view of the fact that over 90 percent of the native migrants to cities were five to 24 years of age at the beginning of the decade, as compared with 80 percent of the foreign immigrants, and in view of the greater fecundity of the foreign-born, it seems certain that native migrants to cities comprised relatively a smaller proportion of children than foreign immigrants. Part of the discrepancy in the estimates of rural migration is due to the fact that the other investigations include places of 2,500 to 25,000 which are omitted in the present writer's estimates, and that small cities have more rural migration relatively than large. Such cities however constitute much less than one-third of the total urban territory. The conclusion seems clear in any case, that in cities of over 100,000 in the decades considered rural migration played a comparatively minor rôle as a factor in urban growth, and that it was relatively less important in the second decade than in the first. In the middle-sized cities, migration from rural districts was responsible for approximately one-third of the urban increase.

Reporting of Colored Persons as White and of Foreign-Born as Native-Born

The next step, logically, in the interpretation of the data in Table 5, would be to analyze the native migration according to paternity and color. Certain striking facts stand out in such an analysis. During the first decade native whites of native parents showed a net loss through emigration of nearly 900,000, while during the second decade, this group showed a gain through migration of over 100,000. Among native whites of foreign or mixed parentage this condition is reversed: this group showed a gain of about 220,000, through migration in the first decade, and an emigration of 420,000 in the second. The apparent conclusion is that native emigrants from the United States were chiefly of native stock in the earlier decade, and chiefly of foreign stock in the second. This conclusion is doubtless valid.

A certain inconsistency, however, appears in the figures as to nativities and color. How can it be that native whites immigrate into the United States? In order to do so they must have left the country previously. Possibly they might be returning emigrants. The age distribution, however, does not favor this hypothesis. A natural suggestion is that the apparent anomaly is

TABLE 9

Proof of Incorrect Color or Nativity Reports

"Native white" population of native parents in the United States in certain age groups in 1900 compared with "native white" population of nativ parents ten years older in 1910. (*125* pp. 336-7)

Ages		Population	Population	Increase or
In 1900	In 1910	1900	1910	decrease (—)
-4	10-14	5,464,881	5,324,283	—140,598
5-9	15-19	5,174,220	5,089,055	—85,165
10-14	20-24	4,660,390	4,682,922	22,532
15-19	25-39	4,234,953	4,049,074	—185,879
20-24	30-34	3,805,609	3,401,601	—404,008

due to an error in calculations, but it can readily be shown that it is not. Table 9 presents data on this point.

In 1910, it will be observed, there were 22,532 more native whites of native parentage 20-24 years of age than there were 10 years previous native white of native parentage 10-14 years of age. Moreover, at least three percent of the original group in 1900 must have died during the 10 years, even taking the lowest death rate which could conceivably apply. This means that about 140,000 native whites of native parents in addition to the 22,532, appeared from some source during the decade. For the preceding age group not less than two percent died during the decade, or 103,500. This leaves over 18,000 native white "immigrants" of native parentage in this age group. If four percent of the youngest age group died during the decade, and if the returns in this group are complete, about 78,000 native white "immigrants" of native parentage in this group must be accounted for. In the age groups 15-24 in 1900 the decreases in population are greater than can be accounted for by the low death rates conceded in the discussion of Table 9.

If then the apparent immigration of native whites of native parents at certain ages cannot be reasonably accounted for as the return to the United States of previous emigrants, and if it is not the result of incorrect calculations, the conclusion seems inevitable that something is wrong with the census returns. The estimates of negro immigration given in Table 5 throw light upon the problem. It is estimated there that 301,000 negroes emigrated from the United States in the first decade, and 355,000 in the second. In view of the small numbers of negroes in the most northerly cities of the United States at the dates under consideration it seems unlikely that any such volume of emigration went to Canada.

Neither is it plausible to suppose that it went to Mexico. Certain numbers of negroes doubtless emigrated to Cuba, Porto Rico, Africa, and other places, but it is questionable whether the number exceeded the number of negro immigrants, of whom about 32,000 entered during the decade. (*128*). If then there is apparently a fictitious immigration of whites, and a fictitious emigration of negroes, it seems plausible to suppose that "migration" on the part of negroes into the white race has occurred. Mulattoes are enumerated as negroes, and it is obvious that with the mixing of the races which has gone on and is going on, practically white individuals are constantly being born into mulatto families. Many of these individuals when they reach an age to separate themselves from their parents, presumably migrate to a new locality, and report themselves as white.

That this process has actually been going on is freely acknowledged by students of the negro problem. Ray Stannard Baker in "Following the Color Line" (*130*) discusses illustrative cases where mulattoes have "gone over to white." A. M. Moore, a negro writing in a recent number of the Survey, (*146*) says: "This all means that as negroes become lighter in complexion they cross the color line and become amalgamated and lost in the white race." The present calculations, therefore, simply make possible an estimate of the extent to which migration from the negro to the white race has been occurring. Since there has, apparently, been very little if any net emigration of negroes from the United States, it seems probable from the estimates summarized in Table 5 that a quarter of a million or more persons per decade born in families classified as negro report themselves as members of the white race.

This reporting of themselves as white by persons born in negro families is not sufficient, however, to account for the apparent immigration of native-born persons into the United States. Taking native whites and negroes together there were in the first decade 90,000 "immigrant" native Americans who were 5-14 years old in 1890, and in the second decade 204,000. It is perhaps significant that in the earlier decade the native whites of foreign or mixed parentage showed a net "immigration" of 218,000. The only theory which seems to account satisfactorily for these returns is that foreign-born persons are reporting themselves in large numbers as native-born. The full extent to which this has occurred

is not apparent in the estimated excess of native Americans, for the emigration of natives from the United States tends to cover up the phenomenon of informal naturalization or nativization by the foreign-born. It seems difficult to escape the conclusion, that over 250,000 foreigners reported themselves as natives in 1910. This is entirely consistent with the data on immigration, since over 8,000,000 immigrants entered the United States in the decade, and only a little over 5,000,000 foreigners in 1910 admitted having immigrated during the preceding 10 years. It has been assumed that the difference was due to deaths and to returns to foreign countries by the foreign-born. Migration into the "native white" group by a few hundred thousand foreign-born simply means that the return emigration or the death rates were a little smaller than has been supposed. Of course this assumption involves the further conclusion that an additional number of native Americans have emigrated to foreign countries, since the total increase in the population is known, and the additional contribution to the population through immigration assumed under this theory must have been offset in some way.

The conclusion that negroes and foreign whites are reporting themselves in large numbers as native whites, tends to cast grave doubts upon the reliability of nativity and color classifications of the census returns. If false reporting is going on to the extent indicated by these estimates it is certainly unsafe to accept at their face value the census returns on these points. Yet it seems entirely plausible to assume that such falsification has occurred. The social, political, and economic disadvantages incurred by being a negro or by being a foreigner are a tremendous handicap to an individual. No elaborate investigations are made to verify an individual's assertion that he is a native white American. With the immense amount of migration that is occurring in the United States it is not difficult to throw off past associations sufficiently to make a new start in life, particularly at the ages of 15 to 24 when family ties are broken, and new economic relationships established.

Age Distribution of Migrants

The ages at which migration occurred is the next point for analysis in connection with Table 5. The method used gives, not the age at migration, but the age grouping of migrants at the

census dates preceding and succeeding the migration. These age distributions, reduced to percentages for the sake of comparison, are summarized in Table 10.

The age distribution of foreign white immigrants appears not to have changed very decidedly between the decades, and seems to be remarkably similar in urban and rural territory. The most

TABLE 10

Percentage Age Distribution of Migrants

Percentages which migrants of each age group constituted of all migrants five years of age and over at the beginnings of the decades, for the several migrating classes. Based on Table 5.

Classes of Migrants	Ages at beginnings of decades								
	-4	5-14	15-24	25-34	35-44	45-54	55-64	65-	5-
Foreign White									
To the U. S.									
1890-1900	(16.6)	38.2	40.7	13.6	5.9	—.6	1.4	.8	100.0
1900-1910	(14.0)	38.3	40.9	14.2	4.2	.3	1.2	.9	100.0
To rural areas									
1890-1900	(19.4)	38.9	41.8	11.3	9.8	—4.4	2.2	.4	100.0
1900-1910	(13.5)	36.8	41.9	15.7	4.2	—.5	1.0	.9	100.0
To medium cities									
1890-1900	(14.1)	38.2	39.1	14.1	4.3	2.0	1.0	1.3	100.0
1900-1910	(11.8)	36.6	37.4	13.7	6.4	1.9	2.3	1.7	100.0
To large cities									
1890-1900	(14.7)	37.5	40.3	15.3	3.1	1.9	.9	1.0	100.0
1900-1910	(15.1)	40.3	41.1	13.0	3.5	.4	1.1	.6	100.0
Native White and Negro									
From the U.S.									
1890-1900		9.2	—80.1	—10.0	—3.3	—20.6	1.7	3.1	100.0
1900-1910		30.6	—86.5	—10.0	—4.8	—32.4	.3	2.8	100.0
From rural areas									
1890-1900		—24.0	—56.2	—9.5	—.6	—10.7	.1	.9	100.0
1900-1910		—26.8	—51.4	—7.1	—3.5	—10.2	—1.0	.0	100.0
To medium cities									
1890-1900		55.8	28.6	7.8	1.3	2.7	1.9	1.9	100.0
1900-1910		45.8	29.2	10.6	7.1	3.4	2.4	1.5	100.0
To large cities									
1890-1900		56.3	35.6	9.6	—4.1	.3	1.4	.9	100.0
1900-1910		60.8	43.9	—.3	—2.3	—3.8	.5	1.2	100.0

striking changes and contrasts which did occur were among the immigrants less than five years of age at the beginnnig of the decades. The number of such immigrants, relative to the number at older ages, was markedly greater in rural than in urban districts in the first decade. In the second decade this condition was sharply reversed by a decrease of nearly a third in the proportion of rural immigrants of the youngest age group, and a slight increase in the proportion in large cities. Similar tendencies appeared in the age group five to 14. The medium sized cities changed in the same direction as the rural districts, but to a less degree. Aside from this alteration of the proportion of young immigrants, the age distribution was fairly constant and uniform for the foreign-born. From 74 to 82 percent of all foreign-born immigrants over four years old at the beginnings of the decades were five to 24 years of age at those dates.

A fairly accurate idea of the ages at migration may be obtained from the age distribution at census dates. If the percentage of migration per year of age were constant throughout the age groups 75 per cent of the migrants of a given decade x to x + 9 years of age inclusive at the beginning of a decade would migrate at the ages x+5 to x+14 years inclusive. The other 25 percent would overlap adjacent groups. If the distribution throughout the age groups were constant these overlappings would balance each other. Under actual conditions they do not balance exactly, but the differences are small enough to be ignored for practical purposes. It is sufficiently exact to assume that migrants of a given decade five to 14 years of age at the beginning of the decade migrated for the most part at the ages of 10-19, that those 15-24 at the beginning of the decade, migrated at the ages of 20-29 and so forth.

On this basis it appears that over three quarters of the foreign immigrants over 10 years of age enter the United States at the ages 10-29, and that this proportion is fairly constant for the two decades and for urban and rural communities. Native white and negro migrants from the rural areas, are even more concentrated in their age distribution. More than half of them migrate at the ages 20-29, and an additional fourth at the ages 10-19 (which probably means chiefly 15-19).

Migration to cities occurs at earlier ages than immigration or emigration for the United States as a whole. Over half of the net

migration to cities occurs at the ages 10-19. In medium sized cities this percentage decreased from about 55 to about 45 percent between the decades. In large cities, however, it increased from about 55 to about 60 percent. The large cities show a fairly marked emigration of natives in the age periods after 30. So pronounced is the concentration of the cityward migrants in the age group just preceding 20, that it is fairly accurate to say that such migration is a phenomenon of the adolescent period.

The results of Table 5 and the points which have been brought out in the discussion on the preceding pages may well be summarized graphically. Charts 2, 3, and 4, have been constructed for this purpose. Each shows side by side migration for the two decades distributed according to age periods. In each one the enclosed area above the base line indicates the amount of net immigration, while the enclosed area below the base line indicates the amount of net emigration. The feathered edges in the earlier

CHART 2

UNITED STATES MIGRATION BY AGES

Foreign-born white immigration to the United States and native emigration from the United States, 1890-1910, distributed according to ages. Source of data Table 5.

Number of migrants per 10 year age group.

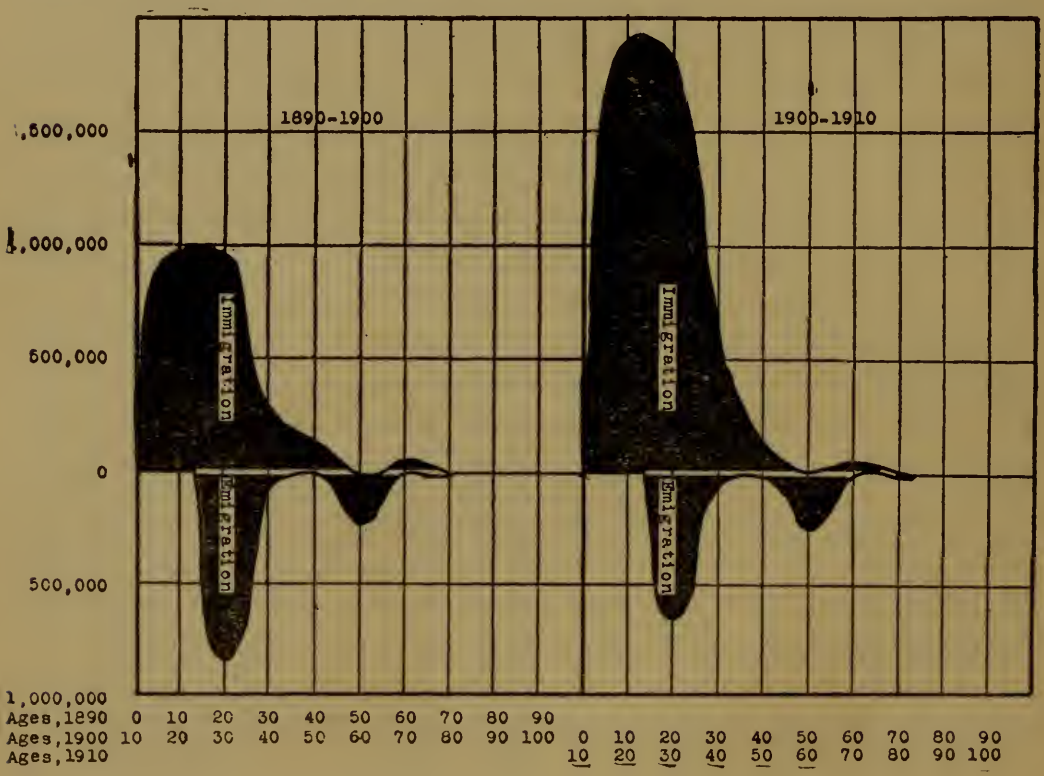


CHART 3

RURAL MIGRATION BY AGES

Net native emigration from rural districts (including cities of less than 25,000) and net foreign-born immigration to such districts of the United States, by age periods, 1890-1910. Source of data Table 5.

Migrants per 10 year age group.

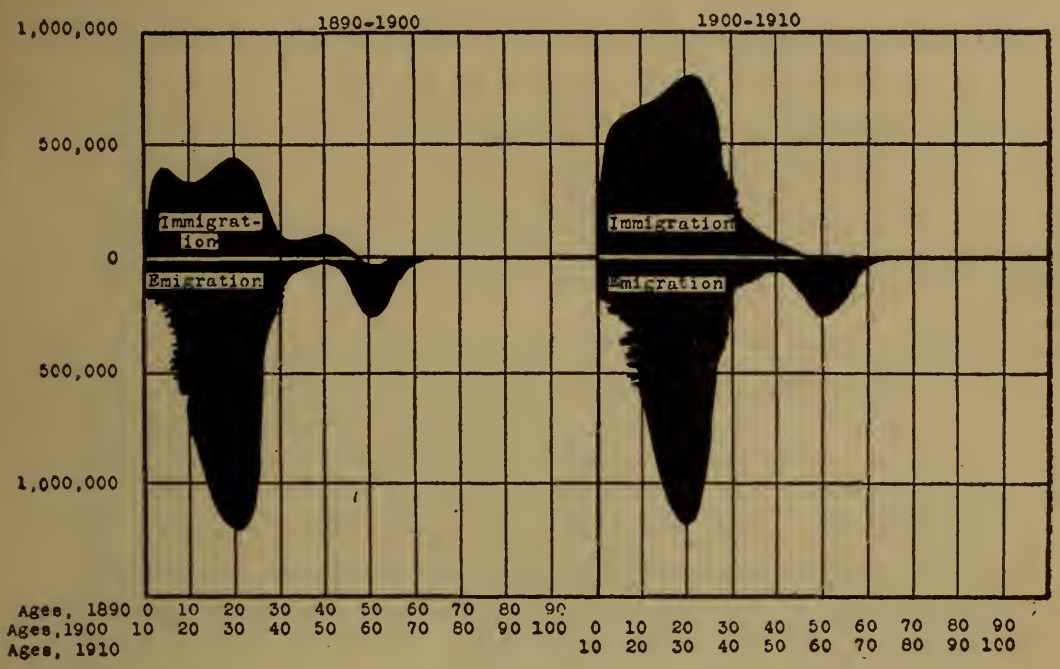
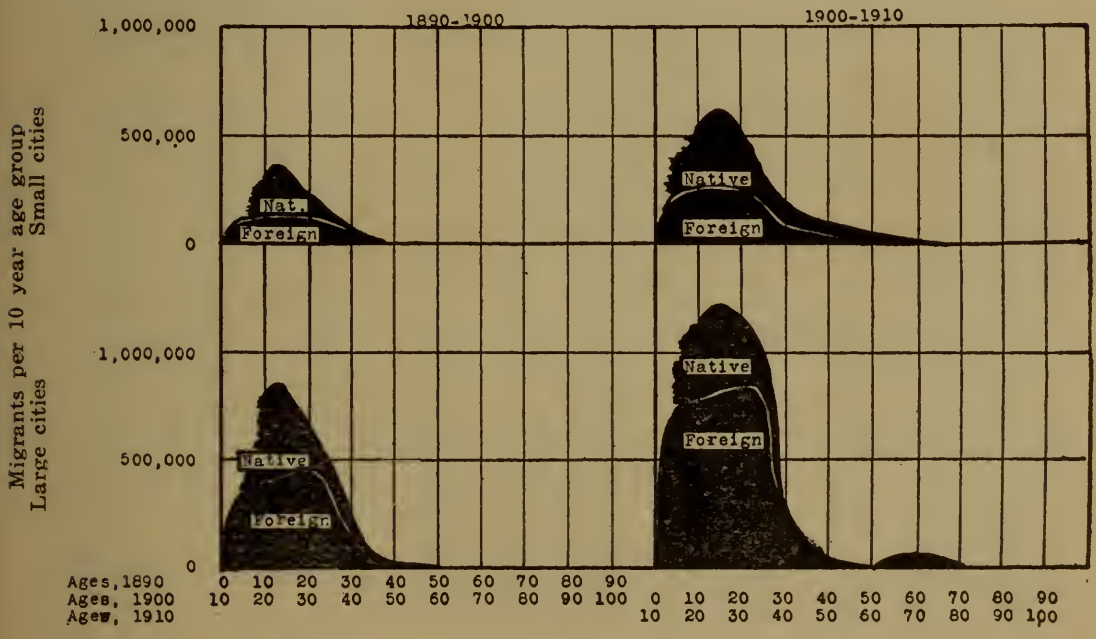


CHART 4

URBAN MIGRATION BY AGES

Net migration to cities of 25,000-100,000 and to cities of over 100,000 in the United States, by general nativities, distributed according to ages. Source of data Table 5.



age periods call attention to the fact that no estimates were made of the amount of native migration at ages under 10 years.

Migration by Divisions

The United States is much too large a unit to constitute the final basis for the measurement of migration. It is important to know the directions in which the currents of population are flowing within the country, and their volumes and rates of speed. For this purpose an analysis of migration has been made by divisions. It

TABLE 11

Migration by Divisions, in Thousands

as estimated by the age distribution method. Sources of data: *124*; *125*, p. 432.

Residence, nativity and age groups	Divisions and Decades							
	All divisions		New England		Middle Atlantic		East North Central	
	1890-1900	1900-1910	1890-'00	1900-'10	1890-'00	1900-'10	1890-'00	1900-'10
All migrants	1296	3688	394	437	898	1737	350	384
Five to 14	963	1883	229	259	456	829	173	242
15-	333	1805	165	178	442	908	177	142
Rural, all natvts.	—1073	—369	98	129	—82	391	—274	—511
Five to 14	—121	94	85	86	21	172	—62	—131
15-	—952	—463	13	43	—103	219	—212	—380
Nat. wh. nat. par.	—1405	—984	—64	—43	—270	—156	—393	—492
Five to 14	—296	—220	—1	—2	—67	—44	—89	—143
15-	—1109	—764	—63	—41	—203	—112	—304	—349
Nat. wh. for. par.	—68	—500	—4	—30	—56	—57	—58	—294
Five to 14	—59	—165	1	—10	—22	—15	—36	—92
15-	—9	—335	—5	—20	—34	—42	—22	—202
Foreign white	907	1786	164	202	227	595	172	280
Five to 14	356	657	83	108	96	222	62	104
15-	551	1129	81	105	131	373	110	176
Negro	—508	—671	2	0	17	9	5	—5
Five to 14	—122	—178	2	1	14	9	1	0
15-	—386	—493	0	—1	3	0	4	—5
Urban, all natvts.	2369	4057	296	308	980	1346	624	895
Five to 14	1084	1789	144	173	435	657	235	373
15-	1285	2268	152	135	545	689	389	522
Nat. wh. nat. par.	515	1086	42	25	170	134	160	254
Five to 14	300	523	22	20	94	94	78	127
15-	215	563	20	5	76	40	82	127
Nat. wh. for. par.	286	87	17	—34	64	—88	116	28
Five to 14	166	125	16	2	50	6	52	28
15-	120	—38	1	—36	14	—94	64	0
Foreign white	1362	2557	230	309	686	1226	314	567
Five to 14	515	1004	103	148	265	529	93	203
15-	847	1553	127	161	421	697	221	364
Negro	206	327	7	8	60	74	34	46
Five to 14	103	137	3	3	26	28	12	15
15-	103	190	4	5	34	46	22	31

would be possible in making such estimates to follow out for each division the method used for the United States as a whole. It was deemed advisable, however, to utilize a short-cut method which is probably accurate enough for the present purposes. This method involves the assumption that the survival rates in the various divisions, when corrected for age, general nativity, color, and urban-rural distribution, were identical. The groups five to 14 years of age at the beginning of the decades were kept separate. Later age groups were lumped, and weighted average survival rates applied to them. The results are summarized in Table 11.

The first line of Table 11 designated "All Migrants" summarizes the net effects of migration (excluding migrants under five at the

Table 11, Continued

Residence, nativity, and age groups	Divisions and Decades					
	West North Central		South Atlantic		East South Central	
	1890 -'00	1900 -'10	1890 -'00	1900 -'10	1890 -'00	1900 -'10
All migrants	—213	—143	—400	—301	—367	—545
Five to 14	—7	47	—76	—12	—75	—129
15-	—206	—190	—324	—289	—292	—416
Rural, all	—323	—454	—500	—477	—431	—702
Five to 14	—90	—104	—140	—114	—113	—201
15-	—233	—350	—360	—363	—318	—501
Native white native parents	—416	—412	—218	—221	—290	—422
Five to 14	—113	—113	—55	—48	—83	—121
15-	—303	—299	—163	—173	—207	—301
Native white foreign parents	—40	—207	5	6	—3	—19
Five to 14	—25	—65	1	2	—1	—6
15-	—15	—142	4	4	—2	—13
Foreign white	153	183	18	66	3	6
Five to 14	53	79	6	21	2	3
15-	100	104	12	45	1	3
Negro	—20	—18	—305	—328	—142	—269
Five to 14	—5	—5	—92	—89	—31	—77
15-	—15	—13	—213	—239	—110	—190
Urban, all	110	311	100	176	64	157
Five to 14	83	151	64	102	38	72
15-	27	160	36	74	26	85
Native white native parents	21	112	37	72	14	89
Five to 14	31	67	25	46	15	41
15-	—10	45	12	26	—1	48
Native white foreign parents	37	36	2	—5	11	—2
Five to 14	22	28	3	1	4	2
15-	15	8	—1	—6	7	—4
Foreign white	37	139	24	43	6	11
Five to 14	22	48	9	17	2	3
15-	15	91	15	26	4	8
Negro	15	24	37	66	33	59
Five to 14	8	8	27	38	17	26
15-	7	16	10	28	16	33

beginnings of the decades) for the several divisions. As noted previously in connection with Table 5, the net gain for the country as a whole from this source was nearly three times as great in the second as in the first decade. The division receiving the largest gain from this source was the Middle Atlantic, comprising New York, Pennsylvania, and New Jersey. These three states had a gain in the first decade from this source more than two-thirds as large as the net gain for the United States as a whole. In the second decade this division had a net gain somewhat under half as large as the net gain for the nation as a whole. Three divisions—the West North Central, the South Atlantic, and the East South Central (the last two comprising approximately the "solid south"

Table 11, Continued

	Divisions and Decades					
	West South Central		Mountain		Pacific	
	1890 -'00	1900 -'10	1890 -'00	1900 -'10	1890 -'00	1900 -'10
All migrants	227	398	168	494	239	1227
Five to 14	105	156	74	161	84	330
15-	122	242	94	333	155	897
Rural, all	179	231	152	413	108	611
Five to 14	80	87	63	137	35	162
15-	99	144	89	276	73	449
Native white native parentage	158	235	57	228	31	299
Five to 14	70	91	29	75	13	85
15-	88	144	28	153	18	214
Native white foreign parentage	32	—8	34	32	22	77
Five to 14	8	—7	10	8	5	20
15-	24	—1	24	24	17	57
Foreign white	55	70	61	152	54	232
Five to 14	17	22	21	53	16	56
15-	38	48	40	99	38	176
Negro	—66	—66	0	1	1	3
Five to 14	—15	—19	3	1	1	1
15-	—51	—47	—3	0	0	2
Urban, all	48	167	16	81	131	616
Five to 14	25	69	11	24	49	168
15-	23	98	5	57	82	448
Native white native parentage	13	84	2	40	56	276
Five to 14	9	34	4	14	22	80
15-	4	50	—2	26	34	196
Native white foreign parentage	5	14	5	21	29	117
Five to 14	3	8	2	8	14	42
15-	2	6	3	13	15	75
Foreign white	9	32	8	17	48	213
Five to 14	3	11	5	1	13	44
15-	6	21	3	16	35	169
Negro	21	37	1	3	—2	10
Five to 14	10	16	0	1	0	2
15-	11	21	1	2	—2	8

and the first including Iowa and neighboring states) sustained net losses through migration in both decades. The greatest increase in the gains through migration was in the Pacific division which jumped from a net gain of 239,000 (exclusive of Asiatic immigration) in the first decade to a gain of 1,227,000 in the second decade, a gain more than two-thirds as great as that of the Middle Atlantic states.

The Rural Exodus

Rural losses through migration, (meaning by "rural" all territory outside cities over 25,000) occurred in both decades in the East North Central, West North Central, South Atlantic, and East South Central States, and during the first decade in the Middle Atlantic States. Rural Gains in the New England States in both decades, and in the Middle Atlantic States in the second decade were due to foreign immigration. The three western divisions which gained in rural population through migration received chiefly native whites, though foreign-born whites were taking a place of increasing importance.

Since rural emigration is of such central importance in the present study, Table 12 has been prepared by assembling all of the

TABLE 12

Sources of the Rural Exodus

Emigration in thousands from territory outside cities over 25,000, by divisions and nativities, 1890-1910. Derived from Table 11.

Divisions	1890-1900				1900-1910			
	All nativities	Native White		Negro	All nativities	Native White		Negro
		Native Par.	For'n Par.			Native Par.	For'n Par.	
United States	—2,345	—1,651	—161	—533	—3,045	—1,746	—615	—684
New England	—68	—64	—4	...	—73	—43	—30	...
Middle Atlantic	—326	—270	—56	...	—213	—156	—57	...
East North Central	—451	—393	—58	...	—791	—492	—294	—5
West North Central	—476	—416	—40	—20	—637	—412	—207	—18
South Atlantic	—523	—218	...	—305	—549	—221	...	—328
East South Central	—435	—290	—3	—142	—708	—422	—19	—267
West South Central	—66	.....	...	—66	—74	.....	—8	—66
Mountain	.....	.....	...	...	.....	.....	...	...
Pacific	.....	.....	...	...	.....	.....	...	...

net losses in rural districts. This does not show the entire rural losses, for migration from strictly rural districts to cities under 25,000 is not indicated. Immigration of the foreign-born has been ignored in this table, and net rural gains in native-born through migration are not shown. The purpose of the table is to present as fully as possible the extent and the sources of the exodus of the native-born from the rural districts of the various divisions.

The extent of the exodus, as thus presented, was over two and a third millions in the first decade, and over three millions in the second decade. The divisions with important rural losses in the first decade were, in the order of the size of their losses: South Atlantic, West North Central, East North Central, East South Central, Middle Atlantic. In the second decade the Middle Atlantic States showed a decidedly lower rural emigration than in the first decade, while the east North Central, West North Central, and East South Central divisions lost much larger numbers than in the previous decade. These three divisions, comprising the great Mississippi basin, sustained a net rural emigration of 2,131,000 native-born persons during the decade of 1900-1910. Emigration of second-generation immigrants began to be a serious factor in the problem in the second decade. Negro emigration from rural territory, which amounted to over half a million in the first decade increased to 684,000 in the second.

TABLE 13

Destinations of the Rural Exodus

Immigration of native whites and negroes, in thousands, by divisions, 1890-1910. Derived from Table 11.

Divisions	1890-1900			1900-1910		
	Total	Cities over 25,000	Other areas	Total	Cities over 25,000	Other areas
Net Rural Exodus	2,345			3,045		
To Foreign Countries	962			526		
To the United States	1,383	1,019	364	2,519	1,623	890
New England	68	66	2	33	33	...
Middle Atlantic	311	294	17	217	208	9
East North Central	315	310	5	328	328	...
West North Central	73	73	...	172	172	...
South Atlantic	81	76	5	144	138	6
East South Central	68	68	...	148	148	...
West South Central	229	39	190	370	135	235
Mountain	99	8	91	325	64	261
Pacific	139	85	54	782	403	379

The destination of rural emigration is indicated by Table 13. In the first decade less than half, and in the second decade a little over half of the rural emigration can be accounted for by native migration to cities over 25,000 in the United States. In the first decade nearly a million of our rural emigrants left the United States while 364,000 migrated from rural territory in certain divisions to rural territory in other divisions. In the second

decade only about half a million rural emigrants left the United States, but 890,000 migrated from rural districts of one division to those of another. The cities to which the urban-bound rural emigrants were drawn in the first decade are located predominantly in the east. Cities of the Middle Atlantic and East North Central States absorbed six-tenths of the rural migration to cities in 1890-1900. The second decade, however, saw a change in this respect; cities of the Pacific States captured a larger number of the rural emigrants than cities in any other division. Adding together rural and urban gains from native migration, the West South Central, Mountain, and Pacific Divisions received three-fifths of the rural emigration of the country. The movements of the two decades may be summarized by saying that in 1890 to 1900 the trend was from the rural districts primarily to the cities of the North-east, while in the second decade the trend was primarily toward the cities and rural districts of the northwest, west, and south-west.

Additional analyses might be made from Table 11 of the make-up of the migration to the cities of the various divisions, but for the present attention will be turned to the effects of the rural exodus upon the rural districts. Taking the rural area of the country as a whole, native whites of native parentage five to 14 years of age in 1890 numbered about 7,464,000. Of these .955 survived until 1900, or 7,125,000, and out of this number 294,000 or 4.1 per cent emigrated from the rural districts during 1890-1900. If this same group of survivors is traced through the second decade, it is found that .947 of them would have survived, at rural mortality rates, until 1901, or 6.750,000, of whom 278,000 would be the survivors of the emigrants of the previous decade, and 6,672,000 would be survivors of those who remained in the rural districts during the first decade. Of this last group, however, 8.6 per cent emigrated during the second decade, or 556,000. Thus, out of 6,750,000 persons who would have survived in 1910 of the rural inhabitants five to 14 years of age in 1890, approximately 834,000 had emigrated, or 12.4 percent. The rural area as a whole, therefore, lost through emigration, just about one-eighth of its potential parents of native stock during the twenty years while they were coming to maturity.

Because it was not practicable to derive migration estimates by

TABLE 14

Rural Migration Rates

Percentages which net rural emigrants or net native rural immigrants constituted of survivors in the same groups, by divisions, 1890-1910. Derived from supporting data of Table 11.

Division	Native whites of native parentage				Native whites, foreign or mixed parentage				Negroes			
	1890-1900		1900-1910		1890-1900		1900-1910		1890-1900		1900-1910	
	5-14	15-	5-14	15-	5-14	15-	5-14	15-	5-14	15-	5-14	15-
United States	—4.1	—7.0	—2.8	—4.1	—2.9	—.3	—7.2	—7.3	—6.7	—12.2	—9.2	—13.3
New England	—.5	—5.6	—.7	—13.1	.8	—2.0	—5.0	—5.5	55.9	—1.1	30.0	—7.9
Middle Atlantic	—6.5	—7.6	—4.2	—4.0	—6.7	—3.7	—4.1	—5.1	63.6	4.8	40.3	.3
East North Central	—5.9	—8.7	—8.6	—9.0	—5.1	—1.8	—12.9	—12.8	1.9	6.1	.0	—6.6
West North Central	—10.3	—13.1	—9.3	—11.6	—4.5	—2.2	—9.5	—12.8	—13.7	—18.0	—15.2	—16.2
South Atlantic	—4.6	—7.0	—3.5	—6.0	—1.9	—5.0	—5.0	—4.6	—11.0	—15.4	—10.1	—15.0
East South Central	—8.1	—10.7	—10.8	—13.1	—2.7	—3.9	—25.1	—19.6	—5.7	—11.8	—13.2	—17.1
West South Central	9.6	6.9	9.0	7.5	12.3	27.6	—7.0	—.6	—4.2	—8.6	—4.7	—6.3
Mountain	26.7	9.4	42.6	38.8	14.7	23.6	8.1	13.6	?	?	122.2	2.9
Pacific	8.0	4.4	44.6	42.8	6.4	13.7	18.3	29.3	?	?	66.0	58.4

ten year periods for each division it is not possible to make a detailed calculation similar to the above for each. Table 14 however, shows by divisions the percentages which emigrants constituted of survivors, classified according to the age distributions available by divisions. The migration of persons over 14 at the beginnings of the decades occurred largely during the ages 20-29, but the survivors are chiefly of later ages. Hence the emigrants in this age group for the rural territory of the United States as a whole constituted only 4.3 percent of the survivors in 1910 instead of 8.6 as was found to be the case when only the group 15-24 in 1900 was considered. Bearing this in mind it becomes evident from Table 14 that the West North Central and the East South Central States lost before 1910 through migration about one-third of the survivors of the native-born persons of native parentage who were 5-14 years of age in 1890. The East North Central and South Atlantic Divisions suffered in somewhat less degree, but more severely than the rural districts of the United States taken as a whole. Losses of native whites of foreign parents were even greater in some divisions, relative to the number of such persons in the divisions. Among some of the southern divisions it seems evident that 40 to 50 percent of the growing negroes emigrated from the rural districts during the twenty years in question.

A preliminary announcement of the results of the 1920 census, issued October 7, 1920, states:

> The figures of the present census also show that the trend of population from the country to the city has become greatly accentuated since 1910.

8. CONCLUSIONS FROM CHAPTER II

1. Over one-fifth of the native-born persons in the United States were born outside of the states in which they were living in 1910.

2. Methods previously in use for estimating migration are not satisfactory.

3. More useful and reliable estimates of migration may be derived from the comparisons of age—distributions at successive censuses, with allowances for intervening deaths.

4. A quarter of a million or more persons per decade born in families classified as negro report themselves as members of the white race, and foreign-born persons are reporting themselves in large numbers as native-born.

5. Over three-quarters of the foreign immigrants over 10 years of age enter the United States, and about the same percentage of native emigrants from rural districts leave their birth places, at the ages of 10 to 29. Migration to cities occurs at earlier ages than immigration or emigration; over half of the net migration to cities occurs at the ages 10 to 19. The migrants, therefore, were chiefly potential parents.

6. Emigration from the rural districts of the United States amounted to over two and one-half millions in 1890 to 1900, and to over three millions in 1900 to 1910.

7. Of the rural emigrants in 1900 to 1910, about one-sixth left the United States, over half went to cities of the United States over 25,000 in population, and less than one-third went to rural districts in other divisions.

8. In 1890 to 1900 the trend of interstate migration was from the rural districts primarily to the cities of the north-east. In 1900 to 1910 the trend was primarily toward the cities and rural districts of the north-west, west, and south-west.

9. The West North Central and East South Central States lost before 1910 through migration about one-third of the survivors of the native-born persons of native parents who were five to 14 years of age in 1890.

10. Preliminary census announcements for 1920 state that the trend to the cities has become greatly accentuated since 1910.

III. CHARACTERISTICS OF NATIVE MIGRANTS IN THE UNITED STATES

The significance of migration in relation to the character of the parenthood of a community lies chiefly in the differences which exist between the migrants and the individuals who do not migrate. In the present chapter two sorts of evidence as to the characteristics of migrants will be examined; first statistical data and second the reports of observers of pioneers and settlers. The character of migrants in the United States as ascertained from these sources will then be analysed with a view to determining its fundamental elements, and with a view to ascertaining the factors which determine it.

9. STATISTICAL EVIDENCE AS TO CHARACTERISTICS OF MIGRANTS

The data utilized in the following analyses were collected in three ways: first are the measurements of union recruits in the Civil War; second are the enumerations of the United States Censuses; and third are the data presented in Who's Who in America. None of these data were collected with a view to proving anything about pioneers or native migrants. All of them were collected with an impartial view to securing certain information on a comparable basis from the various sections of the country. The correlations pointed out below were apparently entirely unthought of by the compilers of the original data. The result is that while the information available does not provide a complete picture of the migrant, the facts which may be deduced from the statistics have an impartial scientific character.

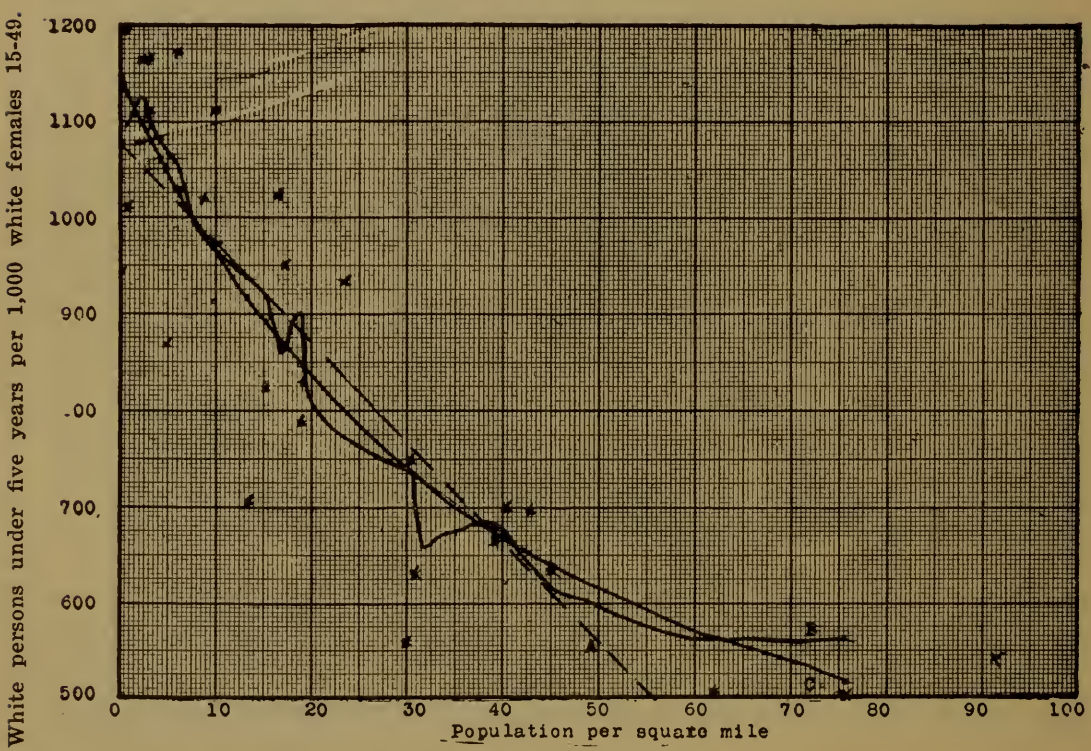
Fecundity of the Pioneers

The first characteristic of the western settlers which is apparent from the analysis of available statistical data is their high fecundity. Although no reliable statistics as to birth rates in the western states were available in the past century, it is possible to measure fecundity quite satisfactorily by means of the number of children under five years of age per 1000 women of child bearing age.

Such indices have been prepared for each state in the United States for each census from 1830 to 1900 by Walter F. Wilcox (*129*). The best index of the degree to which a population was made up of pioneers in years previous to 1850 (when census reports of the state of birth of the native population began) is the density of the population (*125* p. 44); for the states with the least dense population were the ones which were being settled by the frontiersmen of the most pronounced type, while the states with the densest population were no longer frontier territory. The fecundity of the early pioneers as compared with that of other types in the United States may therefore be analysed by means of the correlations between these two indices for the various states.

Between the number of persons per square mile and the number of white persons under five years of age per thousand white females 15 to 49 years of age in the states of the United States for which such data are available for 1830, the Pearson coefficient of

CHART 5



DENSITY-FECUNDITY CORRELATION GRAPH, 1830

showing rectilinear regression line (A), moving average (B), and curvilinear regression line (C). (Data from *125* p. 44; *129*)

correlation is —.832 ± .044. For 1840 the corresponding coefficient is —.769 ± .053. In calculating these coefficients states with densities over 75 per square mile were omitted.

These very high negative correlations indicate definitely that there was an inverse relationship at these dates between the density of population and fecundity. They indicate that this relationship was somewhat less exact in 1840 than in 1830. In order to ascertain what the relationship was between these two variables it is necessary to study the regressions. The correlation graph for 1830, as shown in Chart 5, suggests that curvilinear regressions would more correctly interpret the data than rectilinear. The rectilinear regression of fecundity of density is indicated by the dotted line. The equation of this line for 1830 is:

$$Y = 1078 - 10.4X$$

If the states are arranged in the order of their densities, and the fecundity indices are averaged in groups of five so as to secure a moving average the values indicated by the irregular solid line are the result. Using this irregular line as a basis, a regular curve may be derived, as indicated by the solid curved line which fits the data more closely than the rectilinear regression. The equation of the curved regression is:

$$Y = 294 + \frac{5{,}374{,}000}{(X + 79.5)^2}$$

If the mean square deviation in the Y dimension from this curve is divided by the mean square deviation of the Y's from their arithmetic mean, and if the square root of the difference between this quotient and unity be taken, the result corresponds in principle with the correlation ratio (*156*). The formula for the quantity, when

R = the modified correlation ratio,

S^2 = the mean square vertical deviation from the curvilinear regression, and

σ^2 = the square of the standard deviation, is

$$R = \sqrt{1 - \frac{S^2}{\sigma^2}}$$

This may be derived directly from the formula

$$s = \sqrt{1 - r^2}$$

which is similar to the formula for the errors of estimate in using a rectilinear regression line:

$$e = \sqrt{1 - r^2}$$

where e represents the error of estimate and r is the coefficient of correlation.

The deviations are measured in this case, not from the group averages as is done in calculating the correlation ratio, but from a regression curve fitted as closely as possible to the data. This curve undoubtedly represents more truly the tendencies of the data than the group means would, and the fitting of the curve is possible even though the number of items is too small to justify the use of the correlation ratio in its original form.

The closer fit of the curved regression line is indicated by the fact that the modified ratio of correlation secured is higher than the coefficient of correlation based upon the rectilinear regressions. In calculating the rectilinear correlation only the states with densities of less than 75 per square mile were included. For the sake of comparison of results the calculation has been made for this group, for all the states except the District of Columbia, and for all including the District. The correlations and modified ratios for each of these groups are as follows:

	States under 75 per square mile	All states except D. C.	All states including D. C.
Coefficients of correlation	—.832	—.819	—.737
Modified correlation ratio	—.859	—.833	—.852

All of the ratios are higher than any of the coefficients. It is evident, therefore, that the curved regression is a better basis for estimating the fecundity which corresponded with a given density than the straight regression.

On the basis of the curved regression the probable fecundity in a state with a density of two per square mile in 1830 would be about 1100, while in a state with a density of 30, which was about the condition of rural eastern states, the fecundity would be about 740. In urban territory, with densities of 500 the probable fecundity would be about 450.

Fecundity and Recent Migration

It is a well-recognized fact that the birth rate in rural districts of the United States is higher than that in urban districts. The 1910 census furnishes data (*125*, pp. 425, 427) for the following indices:

Native white persons of native parentage under five years of age per 1000 native white females 15-44 years of age.

In urban territory 266
In rural territory 550

Foreign-born white and native-born white persons of foreign or mixed per 1000 native white females 15-44 years of age

In urban territory 720
In rural territory 1239

Because of the factor of mixed parentage only the urban-rural contrasts in the above indices are valid. It is clear, however, that the net birth rate in the cities is between a third and a half lower than that in the rural districts.

This comparison between city and country is not an adequate basis for judging the relationship between migration and fecundity, for certain rural areas have been gaining rather than losing through migration, while certain cities have gained very little or nothing from native migration. A more useful comparison therefore is between gaining and losing districts whether urban or rural. The basis for such a comparison is given in Table 15.

When the rural and the urban territories are taken separately the relationship between migration and fecundity is very small. In the rural districts a slight tendency is apparent for the divisions gaining through migration to have somewhat greater fecundity than the divisions losing through migration, but the trend is so slight that it cannot be positively asserted. A similar and rather

TABLE 15

Recent Migration and Fecundity

Comparison, for rural and urban communities, by divisions, of the net native white migration during 1900 to 1910, per 1000 survivors of the 1900 population, with the numbers of native white children of native parentage under five years of age per 1000 native white females 15-44 years of age in 1910. Urban means, in connection with migration, cities of over 25,000, while in connection with fecundity it means incorporated places over 2,500. Derived from supporting data of Table 11 and from *125*, pp. 425-428.

Division	Rural		Urban	
	Migration rate	Fecundity index	Migration rate	Fecundity index
New England	—89	373	—8	210
Middle Atlantic	—42	427	11	247
East North Central	—100	454	122	260
West North Central	—111	474	142	270
South Atlantic	—49	673	103	355
East South Central	—126	693	271	358
West South Central	71	704	372	370
Mountain	306	551	423	295
Pacific	378	410	939	221

more marked tendency is apparent among the urban districts, for those divisions where the cities are gaining more rapidly from native migration have also somewhat higher urban fecundities on the average than other divisions. When, however, the rural and urban territories are combined the relationship is reversed, and the sections gaining most rapidly through native migration are lower in general in their fecundity than those losing through migration. The correlation between gains through native migration and fecundity for the urban and rural districts together is $-.400 \pm .133$. The regression of fecundity on rate of migration is represented by the equation:

$$Y = 933 + 3.42X$$

According to this equation areas losing one-tenth of the survivors of their native white populations in 10 years tend to have native white fecundity rates of approximately 467 children under five years per 1000 women of child-bearing age, while areas gaining in 10 years through native white migration numbers equal to 50 percent of the survivors of the native whites at the beginning of the decade tended to have native white fecundity rates of approximately 324.

The conclusions justified by these data are that the migrants to rural districts in the west show very little if any tendency to higher fecundity than the individuals left behind in the more Eastern rural districts, and that the migrants to cities show a distinctly lower fecundity than the individuals left behind in the rural districts.

Height

A second characteristic of the western settlers is evident from the large proportion of tall men among recruits from the western states in the Civil War, as compared with recruits from the eastern states.

This difference may be shown by the correlation between the percentages of the native-born free population in 1860 born outside the states of residence (*117* pp. xxxiii and 616 ff.) and the percentages of the union recruits from the respective states measuring 71 inches or over in height (*102*). The former percentage indicates the extent to which the populations of the various states and territories were made up in 1860 of first generation native migrants, and therefore is an index of the extent to which the

various populations were of the pioneer type. The percentage of recruits 71 inches or over in height indicates the prevalence of tall men among the elements of the population enlisting. The correlation between these two variables is .631 ± .084. The regression equation for percentage of tall men on percentage born outside the state is

$$Y = 6.84 + .1121X$$

This means that the tendency was for tall men to be about twice as numerous among the recruits from the recently settled states as among recruits from the older states. Where 80 percent of the native free population was born outside the state the tendency was for 15.8 percent of the recruits to be five feet eleven inches tall or over; where only five percent were born outside the state only 7.4 percent of the recruits were as tall as five feet eleven inches. The size of the correlation coefficient, and the fact that it is seven and one-half times as large as the probable error, indicates that this tendency was very clearly marked.

Contributions of Civil War Troops

Another source of light upon the character of the western settlers is the data as to the number of troops furnished in the Civil War by the various Union states. It must not be supposed that the number of troops furnished was determined in the Civil War by the draft. Major General Crowder says: "The number actually drafted into the army was but 46,347." *(136)*. As an index of the contributions of soldiers by the various states the number of white troops furnished on a three year basis, as reported by Fox (*103*) was divided by the number of white males 20 to 29 years of age (*117* p. 592). These white males include the foreign-born, but there is no appreciable correlation between the proportion of foreign-born in the population (*117* pp. 606-607) and the proportion of troops furnished. Only the Northern states, excluding the border slave states of Kentucky, Maryland, and Missouri, and only the states accessible to railroad transportation (*145*) were considered. The index for the prevalence of pioneer conditions in the various states is the percentage of the native-born free population in 1860 born outside the state of residence. Table 16 shows the data for the states considered and for those excluded. The correlation between the two indices is .634 ± .093. The regres-

TABLE 16

TROOPS PROVIDED IN THE CIVIL WAR BY NEWLY SETTLED STATES AS COMPARED WITH OLDER COMMUNITIES

State or Territory	Percentage of native-born free population born outside state of residence, 1860. (*117*)	White troops furnished, on a three year, basis, per 1000 white males 20 to 29 years of age. (*103*)
Northern states accessible to railroads		
Kansas	88.4	1172
Minnesota	69.7	1056
Iowa	66.4	1131
Michigan	50.9	1050
Wisconsin	50.5	1175
Illinois	49.0	1210
District of Columbia	42.7	1190
Indiana	37.1	1233
Ohio	23.9	1123
Rhode Island	19.9	887
Massachusetts	17.0	886
Delaware	16.2	945
New Hampshire	15.8	1072
Vermont	15.3	1022
Connecticut	14.7	1105
New Jersey	14.6	785
New York	9.7	994
Pennsylvania	7.9	890
Maine	5.2	918
Non-Confederate States inaccessible to railroads		
Colorado	99.7	208
Nevada	96.3	347
Nebraska	84.6	454
Washington	75.6	302
California	66.7	182
Oregon	65.0	245
Dakota	48.2	525
Utah	41.9	....
New Mexico	2.7	478
Border Slave States		
Missouri	47.6	716
Kentucky	17.1	525
Maryland	7.9	571

sion equation for troops furnished per 1000 men 20 to 29 years of age, on percentage of population born outside the state is

$$Y = 933 + 3.42X$$

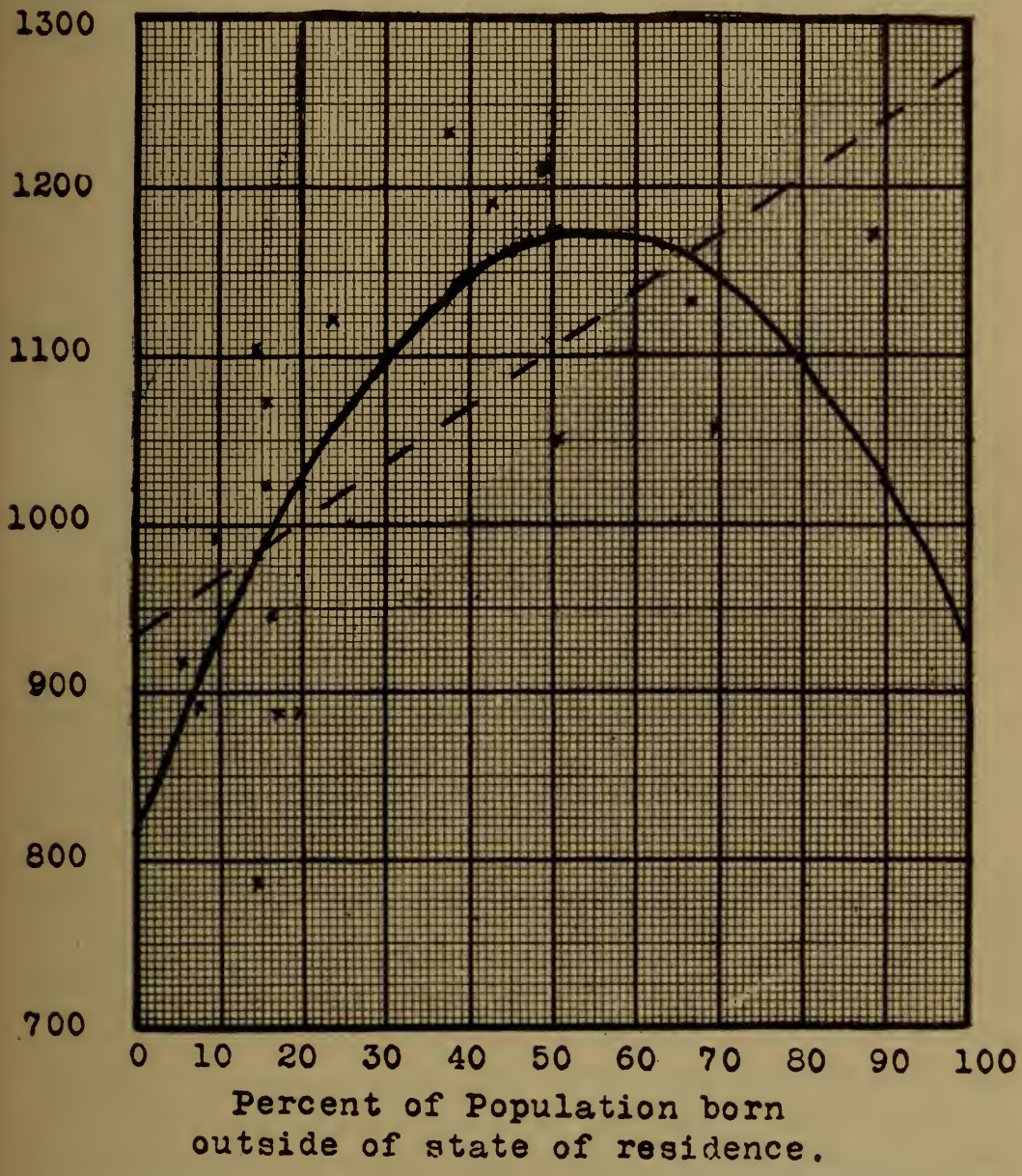
On the basis of this equation the number of troops furnished per 1000 men 20 to 29 years of age would be 1200 in states where 80 percent of the population was born outside the state, and 950 in

states where only five percent of the population was born outside the state.

The correlation graph, Chart 6, indicates however that the rectilinear regression is not the curve best fitting the data. A regression curve whose formula is

CHART 6

Troops furnished per 1000 white males 20-29 years of age.



CONTRIBUTIONS OF CIVIL WAR TROOPS AND RECENCY OF SETTLEMENT

in Northern states accessible to railroads, shown in correlation graph with rectilinear and curvilinear regressions. Data from Table 5.

$$Y = 1173 - \left(\frac{X—55}{2.88}\right)^2$$

fits more closely than the regression line described by the preceeding formula. This curve is shown on the chart. The root-mean-square deviation from this regression line is 91.1 as compared with 97.6 from the rectilinear regression, and the modified correlation ratio is .692 as compared with the coefficient of correlation of .634. It is clear therefore that the curved regression more closely represents the relationship between the two variables than the straight line. According to this regression the furnishing of troops reached its maximum in states where about half of the population was born outside the state, where the ratio was 1173, and fell to its lowest point in the oldest states. In states with five percent born outside the state the probable rate of troops furnished would be 871. The recently settled states thus furnished fully one-third more troops, relative to their population of suitable age and sex, than did the older states. The failure of the extreme frontier states to equal the record of the recently settled states was probably due to the fact that while the railroads had begun to penetrate the outlying territories they were still sufficiently isolated to diminish their realization of the urgency of the call to arms, and to increase the difficulty of reaching points of enlistment, and the difficulty of enforcing the draft.

Divorce and Interstate Migration

A very marked tendency of interstate migrants toward divorce is evident from analysis of data presented by the Bureau of the Census. The most available data for the present purpose are those of 1890. The index used here of the prevalence of interstate migrants in the population is the percentage of the native-born population born outside the state of residence. The index of the prevalence of divorce used is the number of divorced persons per 100,000 married persons. The correlation between these two indices is $.684 \pm .050$. Divorce is thus shown definitely to have been more prevalent in states with large percentages of interstate migrants in their population than in other states, in 1890. The extent of the difference is shown by the regression equation:

$$Y = 3.07X + 81.5$$

where Y represents the number of divorced persons per 100,000 married persons, and X represents the percentage of the native-

born population born outside the state of their 1890 residence. Substituting 80 and 5 for X in the equation it is evident that the tendency is for the divorce rate in states chiefly peopled by migrants to be 327.1 while in states with very few such migrants the rate tends to be 98.6, or less than one-third as great. The correlations may reflect chiefly a tendency of recently settled states to adopt laxer divorce laws with consequent attractions of persons wishing to secure divorces.

Homicide and Interstate Migration

Homicide has been more prevalent in recently settled states than elsewhere. Because of the lack of accurate statistics for earlier years the data used in this connection are the homicide rates for the years, 1915, 1916, and 1917 as reported in census returns on Vital Statistics. (*127*). In order to eliminate the influence of variations in the percentages of urban population in the several states only the death rates in the rural sections were considered. As an index of the proportion of interstate migrants in the populations the percentages of the native rural population born outside the states of residence in 1910 were used. The correlation between these two indices is .554 ± .096. The regression of rural homicide rates on percentages of native rural population born outside the state of residence in 1910 is

$$Y = .297X + 7.55$$

where Y represents the sum of the annual death rates from homicide per 100,000 of population for the three years, and X is the percentage of migrants. Thus the tendency is for the homicide rate to be 9.03 in a 95 percent non-migrant rural population and 31.31 in an 80 percent migrant population. In other words, the homicide rate has tended, even in very recent years, to be three times as great in a rural community made up chiefly of migrants as in a rural community made up chiefly of non-migrants.

Literacy and School Attendance

In connection with literacy and school attendance also the recent data are preferable to those of previous censuses because the 1910 returns distinguish between urban and rural communities, and between racial and nativity groups. In the next three correlations the same indices of proportion of native rural population born outside the state of residence are used as in the homicide correlation. For literacy the index used is the percentage of the native white

persons of native parentage in rural districts in 1910 who were illiterate. (*125* pp. 1208 ff.) The correlation here is —.427 ± .081. If the linear regression equation is used, and 0 and 100 percent are substituted for X the tendency indicated is for the percentage of illiteracy among native whites of native parents in a wholly non-migrant rural community to be 7.24 as compared with —3.38 in a wholly migrant community. Since a negative percentage of illiteracy is absurd it is evident that the true correlation here is curvilinear. A curve represented by the equation

$$Y = \frac{6{,}453}{(X+19)^2} - .18$$

fits the data better than the straight regression line. The modified correlation ratio around this curve is .493 as compared with the rectilinear correlation of .427. If 80 and five are substituted for X in the above equation the corresponding values of Y are .5 and 11.0 respectively. Thus the illiteracy among native-born whites of native parentage in a thoroughly migrant rural community tends to be about one-twentieth what it is in a thoroughly stagnant community.

The correlations between the percentages of interstate migrants in the rural population and the percentages of native white persons of native parents 10 to 14, and 15 to 20 years of age in rural districts attending school (*125* pp. 1148 ff.) are much lower than the correlations discussed above. For the earlier age the correlation is .277 ± .091; for the latter it is .256 ± .097. The regressions indicate that a rural community in which 80 percent of the native whites were inter-state migrants 94.9 of the native whites of native parents 10 to 14 years of age would probably be attending school as compared with 89.4 percent in communities containing only five percent of such migrants, while the corresponding figures for the ages 15 to 20 would be 45.5 and 40.6. The relationship is not so clearly proven, but the probability is established that in rural districts interstate migrants are decidedly more likely to be attending school or to be sending their children to school than non-migrating individuals.

Journalists and Lawyers among Interstate Migrants

Lawyers and journalists have been especially numerous in states inhabited chiefly by natives of other states. Between the percentages of the native white population in 1870 born outside the states of their residence and the percentages of occupied persons in the

respective states in 1870 who were journalists (*118* pp. 674 ff.) there is a correlation of .630 ± .067. The regression indicates a tendency for .071 percent of the occupied population to be journalists in a state having 80 percent of interstate migrants in its native population as compared with .028 percent in a state with five percent interstate migrants. For lawyers the corresponding correlation is .582 ± .073. In a state in which 80 percent of the native white population were born outside the state .55 percent of the occupied persons would probably be lawyers, while in a state where 95 percent of the native whites had been born in the state the percentage of lawyers would probably be .23. Thus both lawyers and journalists tended to be two and a half times as frequent among populations made up of interstate migrants than they were among non-migrant populations.

The Production of Distinguished Individuals and Interstate Migration

On the basis of *a priori* reasoning it seemed probable that the pioneer stock would tend to produce an unusually large number of distinguished persons. In order to test the soundness of this hypothesis analyses were made of the return in Who's Who for 1920-21. (*113*). It is recognized that the selection of persons for inclusion in Who's Who is not made by rigid scientific tests and that many persons of mediocre ability may be included because of positions which they hold or notoriety which they have achieved. It cannot be denied, however, that the vast majority of the persons who have attained real distinction are included in the volume, and that the average intelligence and ability of the persons in Who's Who is unquestionably vastly higher than that of persons not included.

The analysis of the data in Who's Who is complicated by the fact that in order to compare the various states fairly as to their production of men and women eminent enough to be included in that volume it is necessary to divide the number of persons listed as born in each state by the number of persons born in the same state at the dates when the persons in Who' Who were born, or by some index closely correlated therewith. Since the persons listed in 1920 were born at dates ranging over more than fifty years, and since the population of the various states were increasing at very different rates during that period the problem is a complex

one. As a preliminary test a sample of 1000 names were tabulated according to the date and state of birth, grouping the states according to the percentages of the native-born free population in 1860 born in the state. On the basis of this sample the percentage of the Who's Who individuals born in each group of states in the decade 1855-64 was estimated, and these numbers were divided by the white populations of the respective groups of states less than one year of age in 1860. It is believed that this forms a better index than to use the entire populations of the states as bases as other investigators have done, for the proportion of young children varied greatly in the several states, as has been pointed out earlier in this study. The results of the above analysis are summarized in Table 17. It will be noted that the number of distinguished persons produced per 1000 white infants in 1860 shows a very definite inverse correlation with the percentage of the populations born in

TABLE 17

Production of Distinguished Persons and Recency of Settlement, 1855-64

Estimated number of distinguished persons born in 1855-64 per 1000 white persons under one year of age in 1860 in states classified according to the percentage of the native free population of the state in 1860 born in the state of residence. (*113*; *117* pp. xxxiii, 592, 616 ff.)

Percent native free population born in state of residence	Persons listed in Who's Who born in specified class of states			White persons under one year old in 1860	Distinguished persons born 1855-64 per 1000 under one year 1860
	Total	Estimated as born in 1855-64			
		Percent	Number		
90-99	7,454	29.1	2170	278,013	7.8
80-89	5,145	28.2	1450	157,867	9.2
60-79	2,890	25.6	740	141,363	5.2
40-59	3,456	23.5	812	162,131	5.0
20-39	1,251	20.3	254	53,117	4.8

the state of residence at that date. The coefficient is .83 ± .09. The frontier did not produce its share of distinguished men and women. The consistency of the results from group to group indicates that the sample is large enough to yield reliable deductions. The group of states with 80 to 89 percent of its native free population born in the state of residence, which is the second group in the table, contains all of the New England States but Maine, which is in the first group. This fact is in harmony with Nearing's conclusion that the New England states have had the lead in producing distinguished persons. (*115*).

The fact that the more settled states are those with the largest proportions of urban population, and the fact pointed out by Nearing that the cities produce more than their share of the distinguished persons, suggests that possibly this may be the reason for the deficiency of the frontier states in the production of great men. The lack of data as to the percentages of urban population in the various states previous to 1880 makes it difficult to determine this point with finality, but a study of the available data suggests that probably the frontier states produced fewer distinguished persons per 1000 white children in 1870 than older states of similar percentages of urban population. The very recently settled states appear to have done better than the half-way states.

In order to study this question independently of such confusing factors as the proportion of urban population, presence of negroes, and differences in rate of population growth, a limited investigation of the New England and West North Central States was made. In 1870 the West North Central States were the most recently settled of the states with any considerable population, while the New England States were among those with the fewest interstate migrants living in them. These two groups of states, therefore, typify the migratory and non-migratory types of population as well as can be done by a contrast between two divisions. From every fifth page of *Who's Who in America* for 1920-21 all of the persons born in these states were tabulated according to date of birth and whether or not they were born in cities having in 1870 populations over 10,000. The birth-date distribution of all the persons in Who's Who born in the United States was determined by means of a sample of 1000 names. The percentages of the distinguished persons born in the United States who were produced by the urban and rural portions of the two divisions were deduced from these sample data. The percentages of the total population of the United States living in the urban and the rural districts of the divisions in question at each census from 1850 to 1890 were then determined.

Unfortunately the numbers of persons under one year of age are not reported for the cities. If the normal production of distinguished persons by an locality may be said to be indicated by the population of that locality at the dates of birth of such persons,

then the percentage of normal production is indicated by dividing the proportionate population by the proportionate production of distinguished persons. Thus the cities considered in the New England States contained 2.44 percent of the population of the United States in 1850. Of the persons listed in Who's Who as being born in the United States in the years 1845-54, 9.9 percent were reported as being born in these cities in the New England states. The urban territory of New England therefore produced 3.3 times its quota at this period. Similar indices for the various decades and for the areas in question are shown in Table 18.

TABLE 18

PRODUCTION OF DISTINGUISHED PERSONS IN URBAN AND RURAL SECTIONS OF THE NEW ENGLAND AND WEST NORTH CENTRAL STATES

Quotients of the percentages of distinguished persons born in the United States at various periods and listed in Who's Who for 1920-21 who were born in the specified areas, divided by the percentages of the population of the United States resident in the respective areas at corresponding dates. (*113, 125*).

Period	New England States		West North Central States	
	Cities of over 10,000 in 1870	Other areas	Cities of over 10,000 in 1870	Other areas
Average	2.8	1.6	1.6	.9
1845-54	3.3	1.7	.8*	.8*
1855-64	2.5	2.0	2.6*	1.0
1865-74	2.3	1.4	1.4*	.8
1875-84	2.6	1.6	1.8*	.7
1885-94	3.3*	1.4*	1.4*	1.3*

* Items starred are based on samples containing less than 25 individuals.

Chronological conclusions may be drawn from Table 18 only with conservatism. The number of items in the samples, particularly in the urban section of the West North Central States is too small to justify conclusions as to the trend of the production of distinguished persons in these areas from decade to decade. The springing up in the later decades of new cities not included in the list used tends to disturb the character of the rural areas. The general averages, however, involve sufficient numbers to be quite reliable. It is entirely safe to conclude that the cities of these divisions have been producing approximately 70 percent more persons of distinction, relative to their populations, than the rural areas, and that both the cities and the rural districts of the New England States have produced approximately 75 percent more persons of distinction relative to their population than the

cities and the rural districts respectively of the West North Central States. The data certainly give no justification for the assumption that either division is improving in the number of distinguished persons produced.

Light is cast upon the reasons for the failure of the migrant stock to produce more than its quota of distinguished persons, by the correlations between the prevalence of certain professions in the 1870 populations and the production of distinguished persons in the present generation. An investigation of the occupational distribution in the professions of the populations in 1870 indicates that the professions most likely to be unusually prevalent in the states producing more than their quota of distinguished persons were "authors and lecturers," "librarians," and "painters." A correlation was also apparent with the prevalence of "inventors," "artists," "musicians," "sculptors," and clergymen, but the best correlation was secured by the use of an unweighted average of indices of the prevalence of the first three occupations named. This index was secured in the case of librarians, for example, by finding what percentage of the librarians of the United States in 1870 were resident in each state, and then dividing these percentages by the percentages of all occupied persons in the United States residing in the respective states. If the resulting index was 2.0 it indicated that the state in question had twice as many librarians as would be expected from the total number of occupied persons in the state.

The occupations used in this index are obviously likely to be most prevalent in the communities in which there is the most interest in intellectual and artistic matters, in the production and appreciation of books, paintings, and lectures. Hence the average of the indices for the three occupations used may well be referred to as a culture index. Since this index is based upon all occupied persons irrespective of color, it is correlated with an index of production of distinguished persons secured by dividing the number of Who's Who individuals born in each state by the number of individuals both white and black under one year of age in the respective states in 1870. The correlation between these two indices is $.669 \pm .060$. The regression is such that when the culture index is zero the number of distinguished persons produced per 1000 persons under one year tends to be 12.1 whereas when the

TABLE 19

PRODUCTION OF DISTINGUISHED PERSONS IN RELATION TO PREVALENCE OF CULTURAL OCCUPATIONS, (*113; 118,* pp. 674 ff.)

State	Persons in Who's Who per 1000 persons under 1 year in 1870	Index of prevalence of authors, lecturers, librarians and painters among occupied persons in 1870	Percentage of occupied persons in 1870 who were clergymen
New Hampshire	61.30	1.27	.552
Massachusetts	59.55	4.23	.352
District Columbia	54.90	....	.354
Connecticut	50.75	3.95	.469
Vermont	47.15	.92	.543
Maine	41.37	1.11	.427
New York	32.30	1.67	.381
Colorado	29.15	....	....
Nevada	28.20	.76	.135
Delaware	23.18	.28	.372
Ohio	22.91	.91	.425
New Jersey	21.70	1.25	.418
Maryland	21.55	1.16	.362
Nebraska	20.45	.41	.417
California	20.40	3.95	.238
Oregon	19.39	1.53	.528
Michigan	19.06	.72	.354
Pennsylvania	18.91	.72	.376
Wisconsin	18.41	.64	.406
Minnesota	17.79	.86	.467
Virginia	17.35	.20	.260
Utah	15.50	....	....
Illinois	15.23	1.54	.430
Iowa	14.91	.46	.463
Indiana	14.56	.51	.389
Washington	13.16	....	.513
South Carolina	11.60	.09	.210
North Carolina	11.21	.04	.245
Kansas	11.12	.51	.435
Kentucky	10.76	.25	.260
Missouri	10.15	.50	.343
West Virginia	9.49	.14	.404
Alabama	8.65	.18	.245
Tennessee	8.49	.24	.341
Florida	8.00	.30	.324
Georgia	7.56	.12	.214
Texas	7.13	.38	.350
Louisiana	6.92	.25	.158
Mississippi	6.23	.06	.235
Arkansas	5.04	.00	.292
New Mexico	2.28	....	.174

culture index reaches its maximum of 4.3 the production of distinguished persons tends to be 50.7 or over four times as great.

A smaller correlation is evident between the prevalence of clergymen in the gainfully occupied population in 1870 and the production of distinguished persons. The coefficient here is .424±.092. The indices used in calculating these correlations are presented in Table 19.

Since therefore the production of distinguished persons is fairly closely associated with interest in things intellectual, esthetic, and spiritual, the failure to produce a large number of distinguished individuals is probably symptomatic of lack of interest by the community in such things. It does not seem strange that the frontier has little time for art and literature, and that a recently settled environment should be unfavorable to the development of culture.

Of those who migrated to cities a greater percentage became distinguished than of those who remained in or migrated to rural districts. This is proved, relative to the urban and rural districts of the West North Central and New England States by an analysis of the data summarized in Table 18. In the New England States the number of persons listed as living in the cities which had more than 10,000 inhabitants in 1870 is 1.6 times as great as the number listed as having been born in those cities, while the number listed as living outside those cities in the New England States is only .4 as great as the number born outside. In the West North Central States the number living in cities which had a population of over 10,00 in 1870 is 2.5 as large as the number born in these same cities, while the number living outside those cities is only .7 as large as the number born outside. These contrasts are not so great as they would be if the migration to cities which have developed since 1870 were eliminated. Clearly, therefore, the migration to cities carries with it a highly excessive proportion of distinguished or potentially distinguished persons, or else the city environment develops latent possibilities which lie dormant in individuals remaining in the rural districts. Probably both conclusions are correct. Davies (*105*) thinks that he has proved by correlations that the city environment develops greatness, but he has failed to consider several of the vital factors in the problem.

With regard to the failure of the westward migrants to produce their share of distinguished persons, the theory of Frederick Adams Wood seems plausible in the light of the available facts:

> The great western migration of the last century must have produced

a kind of natural selection. Very likely the west has been the gainer and New England the loser, from the standpoint of vigor, energy, and ambition. But it seems fair to suppose that while the better of the middle classes might have joined the emigrant trains the intellectual aristocracy did not. (*153*).

The intellectual aristocracy, it appears from the data discussed

TABLE 20

CHARACTERISTICS OF INTERSTATE MIGRANTS AS INDICATED BY CORRELATIONS

A Summary Table.

Date of data	Characteristic of population	Probable degree of characteristic		Coefficient of correlation or correlation ratio
		In recently settled states*	In states containing few migrants*	
1830	White children under five per 1000 white females 15-49	1104	740	.852 ± .034
1910	Native white children of native parents under five years, native parents per 1000 native white females 15-44	324	467	—.400 ± .133
1860-65	Percent of Union recruits 71 inches or over in height	15.8	7.4	.631 ± .084
1860-65	White troops furnished on three year basis per 1000 males 20-29 years of age	1173	871	.692 ± .085
1890	Divorced persons per 100,000 married persons	327.1	98.6	.684 ± .050
1915-17	Deaths from homicide in three years in rural sections of registration states per 100,000 population	31.3	9.0	.554 ± .096
1910	Percent illiterate among native whites of native parents 10 years and over in rural districts	.5	11.0	.493 ± .064
1910	Percentage attending school among native whites of native parents in rural districts, at ages			
	10-14	94.9	89.4	.277 ± .091
	15-20	45.5	40.6	.256 ± .097
1870	Percentage of occupied persons who were			
	Journalists	.071	.028	.630 ± .067
	Lawyers	.55	.23	.582 ± .073

*The terms "recently settled states" and "states containing few migrants" must be interpreted in each case in accordance with the text discussions of the respective correlations.

above, tended to migrate to the cities, rather than to the western rural districts.

Summary of Conclusions from Section 9

The conclusions reached in the analyses of the above section may be summarized as in Table 20.

The characteristics indicated by these correlations are fecundity, tallness, readiness to enlist in a national emergency, interest in education, and in newspapers and periodicals, absence of persons of decidedly inferior intelligence, and self-assertiveness or quarrelsomeness as indicated by high homicide rates, large numbers of lawyers and probably by the high divorce rates.

In addition to the characteristics therein listed it has been proven that the city environment creates distinguished persons out of rural-born material or that migration to the cities includes a disproportionately large number of the potentially distinguished. Persons born in recently settled states appear not to include the usual quota of those destined to become distinguished while those born in cities include an unusually large proportion of such persons. The West North Central States, even with the factor of urban concentration eliminated, produce far fewer distinguished persons than the New England States. The production of distinguished persons is decidedly associated with interest in intellectual, artistic, and spiritual matters, and therefore the frontier presumably failed to attract in large numbers the intellectually elite.

10. THE CHARACTER OF THE PIONEER AS DESCRIBED BY OBSERVERS

The picture of the interstate migrant which can be secured from correlations in the present state of sociological statistics is at best fragmentary. Statistics furnish impartial information on the points with regard to which they are available, but for a well-rounded picture it is necessary to use historical methods. The interstate migrant was to be found in a pure state on the American frontier. For supplementary information as to the type of individual migrating in the early days, therefore, descriptions by observers of the American pioneer have been utilized.

In order to secure as comprehensive and objective a description of the frontiersman as possible every accessible comment on the pioneer character was listed (*1* to *71*) and the adjectives used by

the writers were recorded and classified. The outstanding types of characteristics asserted of the pioneer were three in number: qualities suggestive of intensity of feeling and action, qualities suggestive of absence of inhibitions or of casting off or breaking through inhibitions, and characteristics indicative of capacity for coöperation. Among the qualities suggestive of intensity of feeling and action were energy, initiative, enthusiasm, intensity, emotionalism, optimism, active-mindedness, keen-wittedness, resourcefulness, interest in education, health and strength. Among characteristics suggestive of the absence or defiance of inhibitions were courage, adventurousness, recklessness, extravagance, tenacity, perseverance, restlessness, love of freedom, lawlessness, dissipation, sincerity, frankness, coarseness, crudeness, self-reliance, and democracy. Among characteritics suggestive of capacity for coöperation were sympathy, kindness, generosity, hospitality, tendency toward group colonization, and capacity for creating orderly government.

As a control on the data in the above classification a parallel analysis was made of the characteristics asserted in recent decades by observers of the populations of rural New England after the westward and city-ward migration had drawn off the individuals having pioneer characteristics. (*72-93*). The character of the residual rural New Englander, as depicted by these observers, is almost the exact antithesis of that of the pioneer. Deficient in energy, flaccid in emotion, unprogressive, lacking in capacity for coöperation, these descendants of the people whom the pioneers left behind exhibit the lack of the qualities for which the pioneer was distinguished. The notable exception to the contrast lies in the prevalence of dissipation in both groups, and even here there is discernable a distinction between the boisterous debauchery of the frontiersman and the degenerate vice of the residual New Englander.

11. ENERGY AS A FUNDAMENTAL CHARACTERISTIC OF THE PIONEER

Of the characteristics of the pioneer all those suggestive of intensity of feeling and action, and most of those suggestive of the tendency to break through inhibitions are explicable quite completely in terms of intense craving for activity and intensity of emotion. Recent investigators of the physiological conditions of

emotion give a theoretical basis for the belief that intensity of action and of emotion tend to arise from the same physiological conditions, and that individuals differ widely in their inheritance of these physiological conditions and hence in their tendencies relative to the expenditure of nervous energy. The present study cannot take up this phase of the matter in detail; a summary of the literature on the subject has been prepared by Holt. (*141*). The pioneer obviously was an individual of the highly energetic type.

12. THE ORIGIN OF THE PIONEER CHARACTER

As to the explanation of the source of the capacity of the pioneer for energetic feeling and action, four theories present themselves. First, it has been suggested that this is a race characteristic of the Anglo-Saxon. Second, it might be asserted that pioneer energy was the result of the youth of the pioneers. Third, it might be held that it was the result of the molding influence of the frontier environment. Fourth, it might be maintained that the influence of the frontier environment was selective in its action rather than formative. It is highly important, in considering the influence of migration upon child welfare, to determine the function of these four factors in producing the energy and the other characteristics of the pioneer. If the first theory is the most adequate one, and energy is a racial characteristic, then pioneer energy may be expected to survive to the extent that the race survives, and the important subject in the study of migration is the racial composition of the migrants. If the theory that youth is the explanation is correct the energy of the pioneers may be expected to crop out in the early years of each generation and disappear as its members grow older. If the energy was due to environmental reactions the pioneer character may be expected to disappear with the frontier, except in so far as social heredity carries it on. If energy was a characteristic derived by selection, it may be transmissible by heredity. The next few pages will be devoted to reviewing the evidence for and against these four theories.

Race as an Explanation of Pioneer Energy

Le Bon has suggested (*144*) race differences as the basis of variations in vigor. He holds that whereas the Anglo-Saxons are distinguished by indomitable energy, will power, and initiative, the Italians, Irish and Spaniards are lacking in such qualities.

This theory finds some ground in Irving's remark that the French trappers were lighter, softer, more self-indulgent and dependent than the Americans. (*37*: pp. 32-3). Timothy Flint speaks of the French Creoles as "mild and amiable people with less energy and less irascibility than the immigrants of other states." (*24*: pp. 567-8). Royce describes the Mexicans and Spaniards in early California as modest, unprogressive, not courageous, having no great endurance, free, careless, genial and charming. (*53*: pp. 30-34). Hittle speaks of the Mexicans as lacking in the activity and enterprise which distinguished the Americans. (*29*: p. 182).

On the other hand, Dunn refers to the French settlers in Indiana as resolute and courageous. (*20*: p. 129). Clemenceau says that Argentina (settled by the French and Spanish) overflows with energy. (*138*: pp. 84, 85, 92). Bryce, though he asserts in one place that the South Americans are less brusque, less strenuous in their work and less eager to get on than the North Americans, says in another place, speaking of the Conquistatores: "The fiery vigor of that extraordinary group of men has often blazed out in their descendants. It is the appearance in almost every state of men of tireless energy and strenuous will that gives their chief interest to the wars and revolutions of the last three hundred years." (*136*: pp. 504-5, 584). In still another place he asserts that there is plenty of energy in the southern republics but that it is not directed toward art or science. (*136*: p. 443).

This conflict of opinion suggests the necessity for some other explanation of the high endowment of energy which the pioneers displayed. The race theory would not explain differences between the characteristics of persons of the same race in the east and in the west, nor would it explain differences between the American and the British character.

Youth as an Explanation of Pioneer Energy

A number of authors observe the fact that the pioneers were predominately young people. The analysis of migration in Chapter III points out the same fact. Statistics for 1850 in selected states, as summarized in Table 21, corroborate their conclusion. The northeastern states with an excess of females were selected, as most nearly typical of the territory from which migration to the frontier was occurring and immigration from other places was at a minimum. The Carolinas also had more females than males but

TABLE 21

AGE AND SEX DISTRIBUTION AT THE FRONTIER AND ELSEWHERE

Percentage sex and age distribution in broad groups of the population in 1850 of four north-eastern states having more females than males (Connecticut, District of Columbia, Massachusetts, New Hampshire and Rhode Island), of five frontier states (Arkansas, Iowa, Michigan, Missouri, and Wisconsin), of five states outside the frontier (Florida, New Mexico, Oregon, Texas, and Utah), and of California. Source of data *119*.

Group or state	Percent of total population			
	Male	In age groups		
		0-19	20-49	50 and over
North-eastern	49.2	42.7	43.9	13.4
Frontier	52.8	55.7	38.1	6.2
Ultra-frontier	53.3	55.0	38.5	6.5
California	92.4	12.5	83.8	3.7

the age distribution in these states was of a different type. The "frontier" states selected are those which at this date were on the borderline between territory with over two persons per square mile and territory with less than that density of population. The "ultra-frontier" states are located outside this line. California was treated separately because the gold rush had produced a type of population decidedly different from that of other pioneer states. The data are presented graphically in Chart 7.

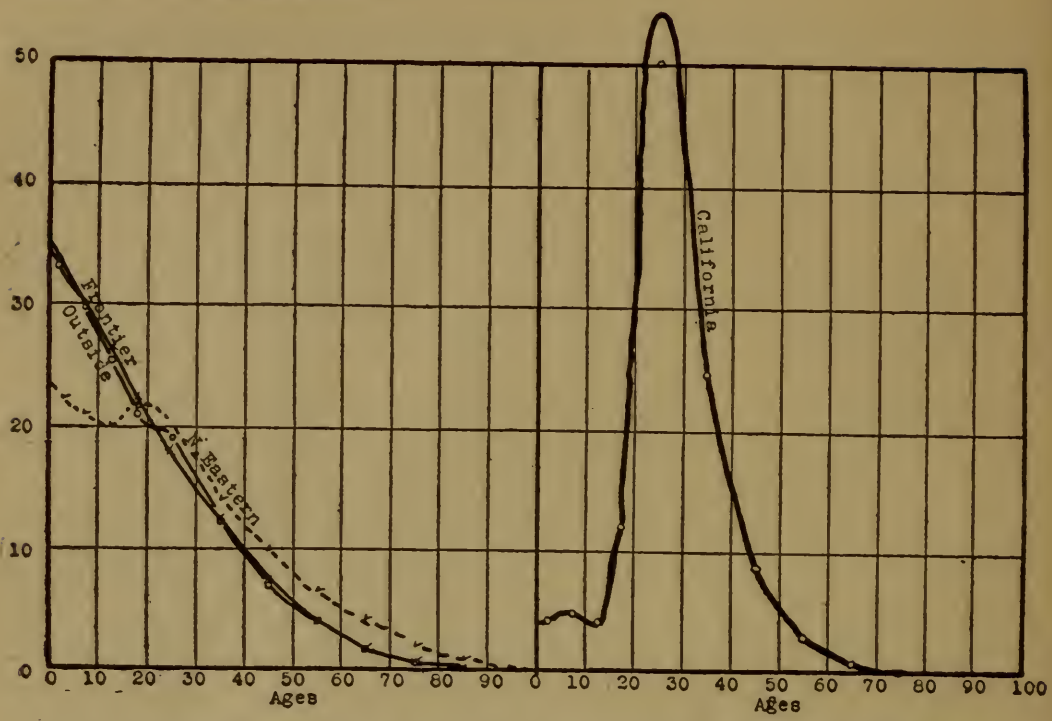
In examining these distributions as one proceeds from the eastern states westward the percentage of persons over fifty years of age drops one-half at the frontier, and in California is reduced to less than one-third the proportion appearing in the north-eastern states. In California four-fifths of the population was between 20 and 49 years of age. Indeed, more than half was between 20 and 29 years of age. In the other frontier and extra-frontier states, however, the proportion of persons in the prime of life is lower than in the northeastern states. The proportion of persons under 20 is one-fourth larger at the frontier than in the north-east, but is less than one-third as large in California.

Roughly, the California population represented the wilderness-breaker type of pioneer, the population of the states outside the frontier represented the cabin-builders, and the states on the frontier contained settlers. The north-eastern group approximates conditions in the least frontier area.

If the California population in 1850 stood alone, a fairly strong argument might be made to the effect that the great energy exhibited by the pioneer was due chiefly if not wholly to the selec-

CHART 7

Percent per 10 year age period.



AGE DISTRIBUTION AT THE FRONTIER AND ELSEWHERE IN 1850

Percentage age frequency curves for frontier states (Arkansas, Iowa, Michigan, Missouri, and Wisconsin), for north-eastern states with more females than males (Connecticut, District of Columbia, Massachusetts, New Hampshire, and Rhode Island), for states outside the frontier (Florida, New Mexico, Oregon, Utah and Texas), and for California. Source *119*.

tion of the most energetic sex and ages. The cabin-builders and settlers, however, had an excess of children rather than an excess of young people. The absence of the aged, and the predominance of males in the frontier states is not pronounced enough to explain the prominence of energetic characteristics in the pioneer character. Rather they are merely symptomatic of a selection which not only drew most strongly upon the vigorous ages and the more energetic and unhampered sex, but also attract from among the young the most aggressive, ambitious and heroic, and left behind, not only the aged and infirm, but also the youths who were lazy, listless and indifferent.

The Frontier Environment as a Molding Force

The frontier may be defined as the border land between settled

and unsettled country, the margin in which the wilderness was being populated and subdued. This border strip of country almost always had three characteristics which tended to have a great influence upon the character of the early settlers. These characteristics of the frontier were newness and thinness of population, and relative isolation from older centers of culture.

Newness and thinness of population were responsible for two important sub-characteristics. They usually prevented the presence of any ready-made, firmly-set social institutions. The frontier was an empty loom into which any social fabric might be woven at will. When, as in the case of the New England settlements, a complete social organization was introduced *en bloc,* the unsettled spaces beyond, where social institutions and traditions were absent, became in their turn the frontier. The other result of the thinness of population was the opportunity and necessity for economic self-dependence. (*3*: pp. 245-6; *34*: p. 122; *36*: I, p. 73; *46*: II, p. 271; *50*: p. 832; *65*: p. 219).

Closely allied with thinness of population in its results was the relative isolation of the frontier from the older centers of culture. The extreme of this characteristic occurred in the case of the Klondyke, where communication with civilization was possible only at long intervals and with great difficulty. The frontiers of Pennsylvania, Kentucky and Ohio were isolated from the older settlements by the Alleghany Mountains. (*51*: I, p. 116; *65*: p. 221 ff.) As the line of settlement moved westward the semi-settled strip was the only insulation between the old country and the new. The introduction of the railway and telegraph greatly decreased the degree of isolation. Yet in general the frontier was largely cut off from social contact with the older settlements and hence was left free to build its own ideals and institutions in accordance with the demands of the new life and with a minimum of interference from the older civilization. (*28*: p. 95).

Under the isolated conditions of frontier life it was inevitable that much of the traditional and conventional should disappear. With no established government, or at best a far-off and vague authority, it was natural that settlers should punish wrong-doers and adjust disputes by primitive methods with scant regard for legal circumlocutions. The breaking of traditions and habits involved in migrating to the frontier encouraged relaxation of moral

standards on the part of persons not controlled by other considerations. The very primitive character of the life naturally tended to eliminate the refinements which go with leisure and with highly organized industrial society. The abundance of land almost always assured to each settler or miner as much as he could work efficiently, and thus placed all upon an equal footing economically (*46*: I, p. 16). The loneliness of the frontier made hospitality as much of an advantage to the host as to the guest. The need for mutual protection inspired group colonization and the establishment of rudimentary justice.

Explicable as these characteristics are in terms of the influence of isolation and absence of local tradition, they have about them the same flavor of intense emotion and impatience at restraints to action as was evident in the characteristics indicative of energy. Legal formalities and polite conventions that obstructed direct action were brushed aside by the pioneer in the same spirit with which he ignored danger and defied discouragement.

The individualism of the pioneer, while it had its roots in the necessity for economic self-dependence, seems to have involved also this same casting aside of restraints. To have abided by the decision of the majority, to have subordinated one's own purposes to the purposes of a group, to have accepted the dicta of social control, would have involved a hampering of activity. The qualities grouped under capacity for coöperation indicate very loose confederation, necessitating little obedience or subordination. When the advantages to be gained were sufficiently obvious and practical the pioneers would consent to mass action, yet the insistence of each man upon his own individual judgment is indicated by the lack of discipline in frontier warfare. The pioneer's hearty sympathy for his fellows has in it something of the intensity which characterized other phases of his emotional life. His ready building up of government and coöperative activity are other forms of his resourcefulness and constructive energy.

The question now arises whether the energy of the pioneer, like his lack of conventionality, might be accounted for as being due to the reaction of the frontier environment upon the settler after his arrival.

At the frontier the emotions and instincts were called directly into play oftener than in civilization. Pugnacity, constructive-

ness, curiosity, fear, and the like, came into daily requisition. Life was direct, immediate, vital, and hence intensely interesting and energy-releasing. The continual novelty of frontier experience was also undoubtedly a great source of interest and a means of releasing vitality which otherwise might have lain dormant. The thrill of primitive untrammeled existence, the stimulus of the possibility of rich rewards for effort and of the ever present sense of danger, and the compulsion to action for the sake of self-preservation, are conditions of the sort calculated to release latent psychic energy. Once started, the energetic traditions of frontier life would tend to be perpetuated by the example of others and crowd pressure and contagion. Bravery, crudeness, lawlessness and other pioneer characteristics are to a considerable degree infectious. It is hard to be cowardly among the brave, cool-headed at a camp meeting, refined in a rough and ready community, or insistent upon legal forms in a country where every man relies upon his own sense of right and ignores other regulations.

The nature of the frontier environment, with its active outdoor life was conducive to vigorous physical health, and this would presumably increase the amount of available energy.

That the molding influence of the environment is not an adequate explanation for the characteristics of the pioneer is suggested by the prevalence of tall men in the newly settled states. It will be recalled that Boas (*131*) found that children of all immigrant races studied except Italian were taller than their parents by amounts varying for the different sexes and races from .1 to 5.9 centimeters. It is possible that some similar process was at work among western migrants and that this process was due to the influences of the western environment on the race. In the absence of data to support such a guess the most probable hypothesis seems to be that selection was responsible for the difference in height between the old communities and the pioneer states.

The Selective Character of Migration to the Frontier

The inadequacy of race differences, youth, and the molding influence of the environment, as explanations for the energy of the pioneer, may best be indicated by bringing forward the evidence which proves that a more fundamental factor was operative, namely selection. The frontier doubtless served to modify the characters of those who came to it, both by helping to release their

energy and by helping to determine the channels into which the energy flowed. But the frontier acted even more fundamentally as an agent of selection. This selective power was due to three fundamental characteristics: first, the freedom which resulted from newness and thinness of population and from isolation from older centers of culture; second, the richness and free abundance of economic opportunities at the frontier; and third, the hardship and danger involved in acquiring its advantages.

Expulsive Selection

The freedom of the frontier acted in coöperation with what may be termed expulsive selection from the older societies to bring to the frontier two types, among others: the religious dissenter and the outlaw. Prominent among American settlers were the Puritans, the Scotch-Irish and the Huguenots. (*13*: p. 240; *21*: p. 140; *34*: p. 76; *38*: pp. 83-5; *40*: p. 199; *41*; *46*: I, p. 78; *51*: I, p. 102; *65*: p. 188). These groups, by virtue of their emotional intensity, their courage, their independence of tradition and their intellectual vigor found life in the old civilization intolerable and were virtually forced out into the frontier.

As France inflicted (*149*) on herself a severe loss of vital energy when she persecuted the Huguenots from her shores, so England cast out into the new world the Pilgrims, the Quakers, and all the strenuous host of those whose vigorous consciences would not brook suppression. So too the Scotch-Irish, driven, because of their religious non-conformity from their native highlands to an unfriendly home in Ulster, forged on into America and poured into the life of the new country the energy which Scotland was too rigid to receive. So also persecuted protestants from the disintegrating German Empire came, to the new world for tolerance. (*26*: p. 231-2). So too a group of Hollanders persecuted for their religion at home, came to Iowa for freedom. (*12*).

This expulsive selection did not cease when America was reached. The religious intolerance of Massachusetts forced strong-minded protesters into the wilds of Connecticut and Rhode Island. (*38*: p. 21; *21*: p. 154; *41*: p. 28). The repression of movements for political liberty in Rhode Island and New York drove the lovers of freedom westward. (*25*: pp. 7-8) The veterans of the defeat of Alamance emigrated to the Tennessee frontier rather than endure the hated oppression of the British (*2*: pp. 16-

17). Church repression on social life drove high-spirited French youths into the forests to become the *couriers du bois.* (*20*: pp. 85-6). Later, in the time of the gold fever, impatience at restraint sent many of the super-energetic of the whole country to California. (*53*: p. 274) Thus the high-potential vitality of Europe and of the east tended to be forced out into the west to build up the energetic stock which has produced the pioneer character.

Expulsive selection sent forth not only the vigorously ambitious but also the vigorously bad (*51*: I, p. 131; *23*: pp. 141, 265; *28*: pp. 72, 86 ff.). In California, Kentucky, Georgia and Michigan, on the cattle ranges and in fact on practically every frontier, appeared social parasites, outlaws, desperadoes, horse thieves, counterfeiters, professional gamblers, prostitutes (*13*: pp. 111, 204; *29*: pp. 163, 176; *33*: p. 234; *35*: pp. 690 ff; *46*: II, pp. 38, 226, 296-9; *58*: pp. 127, 141). Expulsive selection must obviously have been an important factor in sending them to the frontier, and here, among the sinners as among the saints, it was the most vigorous and intractable who were thrust out. In the former case it was conscientiousness and determination not to submit to tyranny; in the other, it was violent refusal to submit to law; in both cases the cause of the stubbornness apparently was high energy, different indeed in direction but the same in essence.

Attractive Selection

This expulsive selection of the strenuous from the old societies had its complement in the opportunities for activity offered by the new country. To the dissenters who had been oppressed and repressed by the rigidity of the old societies the new world allured with its total absence of social structure. To the ambitious and the economically oppressed the frontier beckoned with rich lands (*41*: pp. 30, 259; *23*: pp. 150, 153; *40*: p. 296; *46*: I, p. 73, II, p. 251; *49*: p. 49; *51*: I, p. 113.), plentiful game (*28*: p. 55; *40*: p. 201; *46*: II, p. 235) and fish, and above all with the opportunity to hew out a new home and achieve property (*13*: pp. 195, 245-6; *7*: pp. 48-9; *23*: pp. 144, 148-9, 147; *24*: p. 206; *38*: pp. 83-5; *40*: p. 199; *46*: p. 47; *65*: pp. 192, 197; *67*; p. 68). Sometimes there were special attractions such as gold in California and Alaska or the slavery issue in Kansas. Each channel for activity lured out its own sort of men: religious freedom attracted the intensely ethical (*21*: pp. 141-7), absence of legal restraint the lawless, danger

called out the adventurous (*28*: p. 84; *46*: I, p. 78), the slavery issue reformers, patriots, and adventurers. But in all cases it is to be noted that it was the intense, the vigorous, the virile men who were attracted. When they were good, it was an enthusiastic, intense goodness; when they were bad, they exhibited headlong, thoroughgoing, "manly wickedness." Veterans of Indian fights (*56*: pp. 67-8), of the French and Indian War (*49*: p. 49), and of the Revolution (*51*: III, p. 266; *28*: p. 93) were prominent among the pioneers at their respective periods. A group of "dangerous Puritans" from the middle class were typical of the men who responded to the lure of the frontier (*38*: pp. 83-5). Even among the indentured servants and redemptioners there were large numbers who sold their liberty only in order that they might gain the permanent freedom of the new country, and these men after their liberation often acquired property and influence (*7*: p. 48; *46*: I, p. 67).

Artificial reinforcement of the attraction of the frontier has often proved disastrous. Simple advertising when reasonably truthful seems to have brought no marked ill results (*48*: p. 36). False representations, however, lured into Ohio a party of people unfitted for frontier conditions, and left them helpless and mutinous, wholly unable to rise to the demand for pioneer energy (*40*: pp. 217-218). The benevolent attempt of Gov. Oglethorpe to bring poverty-stricken Englishmen into Georgia in the early days seems to have been partially responsible for the surfeit of lazy, shiftless and incompetent settlers in that state (*26*: p. 253). The measures taken by steamship companies in recent decades to induce European peasants to emigrate to America incurred the same danger.

On the other hand, the contrast between the "extreme individualism" of the Southwest and the intelligent collectivism of the Northwest has been ascribed (*51*: III, pp. 242, 266-7; *46*: I, p. 72) to the fact that the government coöperated in making the northwest territory attractive to the settler whose energy was of the applied variety, while the neglected Southwest attracted men of uncurbed and explosive vitality.

Whatever the influence of artificial selections, it is evident that people of the highest vital potential have been both thrust and drawn into the frontier.

Winnowing Selection

These expulsive and attractive selections acted through a winnowing gale of hardship and danger which kept the faint hearted from even venturing into the wilderness and which drove back the weaklings (*3*; *8*; *11*; *27*; *47*; *13*: pp. 240, 245; *23*: p. 149; *28*: p. 69; *34*: pp. 199, 216; *40*: p. 298; *50*: p. 835). Unhappy was the pioneer who had mistaken his calling! Faint roads led over rocks, stumps and mountains, through dense forests and icy torrents and over burning plains (*1*: p. 18; *13*: p. 197; *40*: p. 296; *46*: II. p. 220). When the frontier was reached there were often no roads at all. There were Indians (*7*: p. 53; *13*: p. 111) and wild animals to fight, bitter winters (*38*: p. 24) and long loneliness (*49*: p. 50) to live through, claims of rival settlers to withstand, privation (*14*: p. 73; *28*: p. 69; *38*: p. 24; *49*: p. 51), lack of manufactured products and of medical services, and hard toil (*49*: pp. 50-51).

The effectiveness of this winnowing process may be judged from the faint-hearted retreats which occurred from every frontier, from Plymouth onward (*38*: p. 24; *46*: II, p. 255; *51*: II, p. 386; *56*: p. 74; *59*: p. 36). The retreaters could well be spared. Unfortunately many of the brave who stayed were killed by hardship or slain by Indians (*13*: p. 111; *48*; p. 62).

The triple selection which thus brought the energetic to the frontier was not an isolated phenomenon in the world's history. James Bryce observes (*132*):

> What Europe is to Asia, what England is to the rest of Europe, what America is to England, that the Western States are to the Atlantic States, the heat and pressure of life always growing as we follow the path of the sun.

This recruiting of the far west by the near west (*3*: p. 239; *46*: I, p. 79, II, p. 196; *53*: p. 230) is vividly illustrated by the composition of the population of recently settled states in 1900, as set forth in Table 22. It will be noted that the North Central and South Central divisions between them furnished 40 percent of the populations of these states. The states themselves furnished almost 25 percent, while 17 percent were foreign born. The Atlantic states together contributed less than 10 percent. By a long process of selection there has been concentrated in the West the quintessence of the vital energy of the world.

TABLE 22

Settling of the Far West by the Mid West

Sources of population in states where persons native to the state formed less than 30 percent of the total population in 1900. Sources of data *122* pp. cxxvi, ff, and xcix.

State	Percentage of the population born in								
	The state of residence	North Atlantic Division	South Atlantic Division	North Central Division	South* Central Division	Western* Division	Foreign Countries	Miscellaneous U. S.	All Localities
Average of the six states	24.4	7.7	1.9	34.0	6.1	7.6	17.3	.8	100.0
Oklahoma	15.9	2.9	3.0	51.1	21.8	.8	3.9	.6	100.0
Wyoming	21.1	9.4	2.1	35.7	3.2	9.4	18.8	.4	100.0
Washington	25.7	9.1	1.8	30.2	2.8	7.4	21.5	1.6	100.0
Montana	25.8	8.9	1.4	28.6	2.3	4.7	27.6	.8	100.0
Colorado	28.1	10.6	2.3	33.8	3.9	3.3	16.9	1.0	100.0
Idaho	29.9	5.3	1.8	24.3	2.8	20.3	15.2	.4	100.0

*Persons born in the state of residence are excluded in all cases.

13. SELECTION IN RECENT MIGRATIONS

Migration to the frontier in the settlement of the United States, as has been proven in the preceding section of this study, was highly selective in its operation, and tended to bring to the west individuals especially endowed with capacity for releasing nervous energy. In the section devoted to describing the directions and magnitudes of the migratory movements which have occurred in recent decades in the United States, it has been shown that these movements have tended increasingly toward the cities, and that the current of migration has ceased to flow into the rural districts of the middle west and is now flowing away from them. Among the statistical correlations summarized in Table 29 are several based upon quite recent data, which indicate that the interstate migrant going to western rural districts in the past few decades has had such characteristics as a low rate or illiteracy and a high death rate from homicide. The analysis of the migrations of persons listed in Who's Who for 1920-21 indicated that the migration to the cities has selected a disproportionately large number of potentially distinguished persons, or else that the cities produced distinguished persons out of migrants from rural districts. There is a strong presumption, therefore, that recent migration, like that of earlier years, is highly selective.

A Priori Analysis of Reasons for the Selectivity of Recent Migrations

The goal of recent migration is no longer a frontier in the old sense. The economic opportunities are not so rich or so free as in the pioneer days. The newer territories already have stable governments. Dangers from Indians have been eliminated, wild animals are much less dangerous than in the old days, automobiles and telephones help to reduce the isolation of thinly settled territory. The journey to the new settlement is made, not in prairie schooners, but in Pullman sleepers. The selection, therefore, must obviously be much less rigorous than that which operated in the days of the true frontier.

Selection of a very genuine sort, however, must be taking place. When a third of the youthful population leaves a settled state to make a new home farther west it is obvious that the more restless, ambitious spirits, the individuals least bound by custom and tradition, and those least inhibited by old ties and by the dread of the new and unfamiliar are the ones who migrate. Under modern conditions it is more likely that the financially successful, and the children of the financially successful, would have the free capital to undertake the journey and to purchase the land and equipment with which to begin farming in the new locality.

The migration from rural to urban districts is more distinctively characteristic of modern migration than the westward movement of rural populations. The goal of migration in this case is not a thinly settled district, but a dense center of population. The migrant is not compelled to create a new social and economic order, for he goes into a system already established and operating. Yet in a sense the city is a closer parallel to the old frontier than the western rural districts are, for the very density and hugeness of the urban centers give the rural dweller a new freedom. He goes into a life where he is not known to many of his neighbors, and where his actions are not matters of much concern to them so long as he keeps the law. Instead of the old closely knit neighborhood where everyone is intimately familiar with the personal life of everyone else and where tradition and conventionality have formed a more or less rigid matrix for the youth, the migrant to the city finds a society moving too rapidly to crystalize, and a variety of interests and points of view so broad that he is free to

choose his own manner of life and thinking. To the spirit that seeks freedom from inhibitions, therefore, the city calls with much the same promise of freedom as was offered by the old frontier.

The attractions of the city differ in superficial characteristics rather than in essential quality from the attractions of the old frontier. Instead of free land, furs, and gold to mine, the city offers cash wages, possibilities of promotion, opportunities to make a fortune. Instead of the old adventurous thrill of Indian fights, hunting, and exploring, the city lures with its multiude of stimuli, its varied and exciting amusements, its throbbing life and its spectacular events. To the potentially distinguished the city offers cultural opportunities, and stimuli and contacts with others interested in the intellectual and the artistic.

The city too has its winnowing hardships. Loneliness, meagre earnings, gruelling competition for promotion, periodic unemployment, such things as these take the place of the dangers and the hardships of the frontier.

In the case of migration to the city, therefore, it seems clear that a selection parallel to that operating on the pioneer is in force. Expulsive selection tends to force the non-conformist out of the rural neighborhood. Attractive selection lures the adventurous, restless, action-loving, energetic, potentially distinguished youth with promises of ardent life, fame and fortune. New hardships and the strenuous competition for the prizes of the city turn back the weaklings or thrust them down into the lower levels of the slums. The result to be expected is that the migration to the city takes from the rural districts the energetic stock just as the migration west-ward took from the east the energetic.

Opinions of Other Observers

This line of *a priori* reasoning has been followed by other students of the problem. Ross (*150* pp. 23-24) says:

"The city therefore drains from the country the young unencumbered adults, leaving an excess of children and aged . . . . No wonder the growing city throbs with energy and hope while the traits characteristic of the depleted country-side are deliberateness, reserve and conservatism . . . . Perhaps the trait most distinctive of those who follow the call of the distant city when farming stagnates is the spirit of initiative. They have it in them to make a start in spite of home ties, the bonds of habit and the restraints of prudence. Had they not emigrated their spirit of initiative would have shown itself along other lines . . . .

A heavy outflow of this element need not leave the community poorer in physique, or brains or character, except as these are correlated with the initiative, but it does leave it poorer in natural leaders . . . .

Of late the situation has decidedly improved . . . . so that in the more prosperous regions it is the restless rather than the ambitious who wander to the city."

Davenport's conclusions (*15*, p. 211) relative to the effects of rural-urban migration appear to have been based upon observation, though not under systematically controlled conditions:

In the rural and semi-rural population within 100 miles of our great cities we find a disproportionate number of the indolent, the alcoholic, the feebleminded and the ne'er do well . . . . Such villages, depleted of the best, tend to become cradles of degeneracy and crime. Thus our great cities lure to themselves the best of the rural protoplasm, surround it with conditions that discourage reproduction.

Many of the observers who discuss the condition of rural New England assert that the depletion is due to the trend to the cities as well as to westyard migration. Thus Deming (*77*) speaks of "the long procession of younger sons of the farm moving to the cities, or to the west;" Howard says that "the enterprising young people leave for the cities" (*83*); Sanborn (*88*), suggests that the causes of the depletion are in part the rush to the gold fields and the emigration to the prairies and to the cities, and Robinson (*85*), speaks of the exodus of young people to the cities as a most serious aspect of the problem. A different view of the causes for rural degeneracy is taken by Erville B. Woods. Speaking of "decadent rural communities such as may be found in abundance in Northern New England," he says:

A perfectly good region inhabited by perfectly good people may become discouraged, despondent, decadent, owing to nothing more serious than the inheritance of obsolete traditions of agriculture, of social relationships, and to discouragement due to long continued shrinkage of population . . . . A rural community which is given over to reminiscence and lethargy may, by a proper adjustment of its economic life and a proper stimulus of its civic imagination, begin once more to function with as much exhileration as the very immigrants and pioneers themselves. (*154*).

Further Possible Methods for Scientific Determination of Whether Recent Migration is Selective

The absence in the past of accurate statistical studies of migration suggests that the above conclusions as to the part played by urban migration in depleting New England are the results of *a*

priori reasoning and general observation rather than scientific investigation. The analysis of Who's Who statistics is not quite conclusive as to the innate superiority of the persons who migrate cityward. A broader and more direct method of determining the question would be to make accurate tests and measurements of groups of children and young people who have recently migrated to cities, and to compare the results with the results of similar tests and measurements of persons of comparable age and race in the districts from which they came. The writer has been unable to locate any material secured in this way. The nearest approach to such data is an investigation made by Collins and Pyle (*147*). The study covered the entire school population of a rural Missouri county, from eight to 18 years, including over 2,000 children. This group is compared with norms derived from tests of children in small cities chiefly in Missouri. In physical development the differences are relatively slight.

Mentally, rural children average only about 75 percent as high as urban children. The mental standing of rural children relative to urban is lowest at the age of 8 years (61 percent) and highest at 18 (89 percent). The causes for the contrast between rural and urban children in mentality are said by the authors to be better stock in the cities, tendency of urban environment to hasten mental development, and better schools in cities.

The difficulty with such comparisons between urban and rural districts is that no distinction is ordinarily made between native-born and foreign-born, and that the migrant stocks are not differentiated from the non-migrant. The result is that it is impossible to say whether an observed difference is due to a contrast between migrants and non-migrants or whether it arises from some other difference between the urban and rural groups considered. This difficulty in addition to other defects, prevents the use of data as to the relative physique of army draftees from urban as compared with rural districts, and the data as to physical defects in city and country school children.

In spite of the absence of field studies directly focused on the problem, the conclusion that migration from rural districts has been selective is so strongly supported by statistical data, by *a priori* case in favor of such a view, and by the weight of opinion in its favor, that it seems justifiably to accept the conclusion, and

to act upon the hypothesis that the rural exodus is draining territories such as the country districts of Iowa of highly energetic and able individuals, leaving individuals of lower energy and ability to be the parents of the children of the future.

14. THE INFLUENCE OF MIGRATORY SELECTION ON CHILD WELFARE

Two questions must be answered in determining the relationship of the migrations of the past to the welfare of the children of the future. The first is: to what extent are the characteristics of the pioneer and recent migrants likely to be transmitted to coming generations? The second is: to what extent are pioneer and recent migratory characteristics desirable in parents and children?

The Inheritance of Energetic Characteristics

Relative to the hereditary transmission of the characteristic of being energetic, Davenport states:

> Of the inheritance of this quality (general bodily energy) there can be no doubt . . . . when both parents have bodily energy that is regarded as 'decidedly above the average' all of their children will have either excetpional or at least medium energy. The mating of two energetic parents in 192 families produced 413 offspring . . . . Of these 301 (73 percent) are placed in the highest grade. (15 pp. 63-4).

The method used by Davenport in arriving at the above conclusion was the rating of a group of parents according to their general bodily energy and the similar rating of their children, with a comparison of the results. The same method may be applied in a more wholesale way by comparing the ratings of the pioneers as analyzed in earlier sections of this dissertation with the ratings of the American people of today by detached observers. The "American people" referred to in these ratings are presumably the classes with whom the average better-class traveler comes in contact, and this class is in general made up of the descendants of the pioneers who settled the United States, with an admixture of recent immigrants and their children. If the characteristics observed of the Americans of the present correspond closely with the characteristics observed of the pioneers, the conclusion is strongly suggested that the pioneer characteristics tend to be transmitted, either through the germ plasm or through the influence which passing generations exert upon the environment of coming generations. The writers selected are chiefly foreign

observers of various nationalities who have published comments upon American characteristics within the past ten years.

Gustav Rodrigues, a French observer, entitled his book on the Americans, *The People of Action.* Its conclusions are thus summed up by J. Mark Baldwin:

What is the American? This is what he is: In temperament a man of action, of efficiency; in the matter of culture, a novice; in theory and practice—so far as he has any—an individualist; in tendency and purpose, whether individual or national, an unconscious idealist. (*97*: p. xxiii).

"On all these points," remarks Baldwin, "I agree with the author." Some of the phrases used by Rodrigues to describe the American are:

Largeness of conception, rapidity of decision, and—in a word—audacity of execution (p. 28) . . . . for his sole purpose is to tend to put forth all his strength indefinitely, unceasingly. (p. 37). Most individualistic (p. 38). His true joy is to live intensely rather than deeply (p. 38). This ardor in the pursuit of wealth does not exclude generosity (p. 48). With the American the instinct for freedom of movement . . . . is characterized by impetuosity, violence (p. 56). He is not cultivated, but rough hewn, a vivid, cheerful creature (p. 57), a tenacious man (p. 58).

Hugo Münsterberg (*96*) uses the following expressions as descriptive of the Americans:

Yearning of the American heart after self-direction. Inborn good nature (p. 3). Complete individualism (p. 7). Instinct for free self-initiative . . . . pressure to be up and doing (p. 229). The American chases after money with all his heart . . . . and it is the game he likes and not the prize (p. 234). The American takes the keenest delight in the employment of all his faculties in his work and in the exercise of his own initiative (p. 235). The tireless instinct for personal perfection (p. 362).

George T. Smart (*99*: p. 137) says:

The American works faster than the European. The American not only works faster; he walks faster,—everything he does is done more fiercely.

George Santayana says of the American (*98*):

All his life he jumps into the train after it has started, and jumps out before it has stopped, and never once gets left behind or breaks a leg (p. 592).

The discovery of the new world exercised a sort of selection among the inhabitants of Europe . . . . The fortunate, the deeply rooted and the lazy remained at home . . . . The American is accordingly the most adventurous, or the descendant of the most adventurous of Europeans (p. 590).

H. K. Tong, managing editor of the Peking Daily News says (*100*):

America's hustling enterprise is matchless . . . . Although China cannot equal America in commerce, transportation, daily luxuries and education, on the other hand, Chinese hospitality, filial piety, cheerful industry, politeness, wonderful memory, and peace-loving temperament are lacking in Americans. . . . In industry the Chinese excel the Americans . . . . The Chinese people are always content with their lot; the Americans never are.

Sudhindra Bose, a Hindu student in this country, used the following expressions in writing of the American character (*94*):

Incurable optimism . . . . ultra independence . . . . intelligent, keen and alert . . . . none too industrious . . . . not thorough . . . . diversity of interests . . . . superficiality and inaccuracy . . . . in point of capacity and natural ability the American ranks with the Hindu; in originality and energy the American is superior; but in application and thoroughness inferior. . . . frequently regarded as uncompromising individualist, self-complacent, self-sufficient.

Edward A. Steiner says (*99.1*):

We are wasteful, extravagant and reckless.

Gertrude Kingston, a British observer, uses such expressions as the following (*95*: p. 259):

Bouyant quality of young America's hopefulness . . . . Optimism is the prevailing note of the poor . . . . The American youth . . . . is full of self confidence . . . . Though the other man may not like being worsted in the fight, it appears to act rather as a spur to him than as a discouragement . . . . No American ever gives up hope of becoming a millionaire.

An exceptional opinion is that expressed by Henry Nevinson of England:

In my own experience, limited to the Eastern and Central States, but varied and including most classes, I found the American exactly opposite to his reputation among ourselves. He is thought to be ill-mannered, discourteous, brazenly boastful, grasping, oversharp in business, free, inclined to change, rebellious, and fearless of the future. I found him exquisitely polite, obliging almost to excess, so modest that he accepted as evangelists lecturers who in England would be received with mockery, so careless of business that he does not persuade his innumerable "stenographers" even to answer a letter, and so far from liberty-loving or rebellious that he allows himself without protest to be ruled by second-rate men and by a police system almost as vile as the Russian or German before the revolutions. Grace and charm are the dominant characteristics. (*96.1*)

This divergent opinion possibly reflects a development of the eastern character as a result of westward migration.

These detached observers of the American people of to-day mention as salient characteristics the very qualities which distinguished the pioneer. Executive intensity—love of action for its own sake—is the feature most prominent in the modern American as it was in the frontiersmen. Emotional intensity—optimism, buoyancy, ardor, vividness—these characteristics stand out to-day as they did on the frontier. Mental vigor—hunger for self-perfection, keenness, alertness—still distinguish the American. Inhibitions still are disregarded; wastefulness, recklessness, tenacity, absence of culture, individualism and democracy are prominent among the features noted by foreign observers.

Certain qualities of interstate migrants as shown by the correlation method are also distinguishing characteristics of the American People as a whole, though in a less intense degree. This is especially true of murder and divorce. Frederick L. Hoffman is quoted as authority for the statement that the rate of homicide in this country was 6.5 per 100,000 in 1911 as compared with .9 in England and Wales. (*107*). The United States Census Report on Marriage and Divorce for the period 1867-1906 states:

> The divorce rate is higher in the United States than in any foreign country except Japan. Switzerland, which has the highest rate of any European country, reported 32 divorces per 100,000, only about three-sevenths the number reported in the United States. (*126*)

In general it is clear that the characteristics which distinguish the interstate migrant are intensifications of the characteristics which distinguish the American from Europeans, and conversely that the American character has been determined to a considerable extent by the inheritance of pioneer characteristics.

The pioneer character has persisted. Social momentum certainly has played its part in the perpetuation of the traits of early settlers, but in view of the revolutionary change in the environment with the passing of the frontier, the persistence of the energy of the frontiersmen must certainly have been due in large part to its hereditary transmission in the germ plasm.

Significance of the Fecundity of the Pioneers

Since the pioneers tended to hand on to their children, both through the germ plasm which they transmitted and by the traditions and institutions which they formed in their families and in their communities, their energetic characteristics, the fact that the pioneers were prolific becomes especially important. Select-

ive migration would have relatively little influence upon the welfare of children in the world as a whole if migrants had the same tendency to reproduce as non-migrants. Actually, however, the early migrations to the west were correlated with very high fertility, and the characteristics of the pioneers therefore were transmitted, socially and biologically, to a disproportionately large fraction of succeeding generations. Conversely, the fact that recent migrations are inversely correlated with fecundity indicates that the characteristics of modern migrants are less likely to be perpetuated by inheritance than those of non-migrants.

Pioneer Characteristics in Relation to Desirability in a Parent

In order to discuss whether or not it is desirable that the energy of the pioneer and the other characteristics which grew out of this energy should be widspread among the parents of American children it is essential to define what is meant by desirability in a parent. The desirable parent is the sort of parent who best promotes the welfare of the child. By child welfare as used in this study is meant the conditions which promote first the happiness of the child during childhood, second the future usefulness of the child to society, third the development in the child of the capacity for happiness in later life, and fourth the capacity of the child during childhood to contribute to the happiness of others. Parents who best contribute to these four aspects of child welfare must, first, be the bearers of germ plasm which is not only free from degeneracy, but which is capable of developing for the child an organism fitted for service and for richness of experience. Desirable parents must in addition be able to maintain a normal economic environment for the child, must have a moral character such as will develop in their offspring ethical idealism, and should have intelligence such as will promote the intellectual life of their children.

Child Welfare in Rural New England

The significance of pioneer energy in relation to desirable parenthood is brought out strikingly by contrasting conditions in rural New England with conditions among the frontier settlers, and by considering the relative advantages to a child of being born of pioneer stock rather than of residual New England stock, and of being born in the environment provided by the pioneers rather

than in the environment provided by the residual New Englanders. Conditions in rural New England in recent years may be brought out by quotations from various observers.

Lincoln Steffens wrote of *Darkest New England* as follows (*90*):

> In two states, Connecticut and Vermont, there is all the appearance of political and social death. . . . There is little vitality of any sort. There is degeneracy; not only political, moral and mental, but physical. Statistics show insanity, and direct inquiry shows most abnormal sex decadence.

Steffens asserts that the "good old American stock in the country and in small towns" is "regularly for sale" in elections, and that the practice is so well-established that it has corrupted the very thinking of the communities.

C. Deming writes (*77*) of the

> decline of old yeoman pride; decay of local spirit and habit of association; lowered interest in politics and civic matters.

The Rev. H. A. M. Briggs (*73*) writes of a rural Massachusetts community:

> Rural communities are languishing for the best things of religious social economic and industrial life. . . . The people are not prepared to take the initiative. . . . Evidences of this decline (of sturdy New England families) are apparent in every rural community. . . . A better rural race is needed; rural sections demand new blood, sturdier life. The New Englander cannot provide enough of it.

Alvin F. Sanborn (*88*) uses the following expressions in writing of *The Future of Rural New England*:

> The men are listless, sullen and stolid. . . . The women pale, haggard, prematurely old, shrill, ill-tempered, untidy, and inefficient in housekeeping. . . . The social life is pinched and bare. . . . Of neighborliness there is little. . . . A dearth of public spirit. . . . Civic honesty naturally is at the same low ebb as civic spirit. . . . Its outward delapidation and emptiness of inner life could not be exaggerated.

R. L. Hartt, writing of *Rural Regeneration of New England,* says (*81*: pp. 506 ff.):

> And the misfortune.....is not a mere reduction in quantity. It is also reduction in quality. The ambitious, energetic, progressive element departs; the stolid, enfeebled, immobile element remains..... The inhabitants are sunk to hideous degradation.....awful dry-rot that is taking the life out of the country towns.

C. N. Hall (*79*: p. 54) says:

> From these (hill) towns the young blood of the Yankee race has long since departed to more promising fields of effort.

Tre Rev. Julius H. Ward, in discussing *The Revival of our Country Towns,* says (*92*: pp. 242-243):

. . . . there are left for the distant country towns among the hills chiefly the lame and the lazy and those who either take to the soil or have duties to others which compel them to remain. . . . The vital element, the social and personal lead in the rural town has been taken away.

Frank W. Rollins says, in relation to *The Renaissance of New England* (*86*):

(The loss of population by the country towns has been) attended by the loss of the brightest, best and most energetic youth. The Town loses its ability to keep up schools, religious interest, civic and moral tone, loses energy and hope. Those left are the aged, decrepit, feeble and non-ambitious.

Gill and Pinchot, in their study of 6000 country churches describe as follows the social conditions in 18 predominantly rural counties in southern and southeasern Ohio: *(25.1)*

The religious, social and economic welfare of the people are going down. . . . The churches have failed and are failing to dispel ignorance and superstition, to prevent the increase of vice, the spread of disease, and the general moral and spiritual decadence of the people. . . . In this region, therefore, where there is so high a percentage of illiteracy, of illegitimacy, and of deaths from preventable disease, the people are more nearly pure Americans than in the rest of the State. . . . Here gross superstition exercises strong control over the thought and action of a large proportion of the people. Syphilitic and other venereal diseases are common and increasing over whole counties, while in some communities nearly every family is afflicted with inherited or infectious diseases. Many cases of incest are known, inbreeding is rife. Imbeciles, feebleminded and delinquents are numerous, politics is corrupt, the selling of votes is common, petty crimes abound, the schools have been badly managed and poorly attended. . . . Moral and religious poverty must bear at least as much of the blame as poverty of soil. . . . As a rule the agricultural opportunities of the region are neglected. . . . Poor soil, as a rule, does not hold upon itself the most enterprising families so tenaciously as good soil, and for that reason we might fairly expect the people of these districts to have less vigor and less initiative . . . . It is calculated that no less than 61,000 persons emigrated in the 10 year period from 1900 to 1910 from the strictly rural districts of 16 of the 18 counties.

The rural conditions pictured by these writers hardly constitute the sort of environment into which a child could be born with the brightest prospects of happiness and of service to its fellow men. Decayed in its government, schools and churches, broken down in its morals, bankrupt in spirit, a community such as this would tend to be the grave of ambition and of achievement. Nor are the natives who have allowed their community to sink to such levels desirable as parents. Flaccid, ennervated, stolid, bitter against re-

form, degraded in morals, these culls of the American stock promise to their children degenerate germ plasm and poverty, both economic and spiritual.

The Feebly Motivated

Discussions of race betterment have concerned themselves chiefly with means of eliminating the feeble-minded and if possible encouraging the reproduction of the powerful-minded. It has been claimed that vice, pauperism and crime are closely associated with feeble-mindedness, and that these problems can never be solved as long as imbeciles and morons go on reproducing at rapid rates. The facts presented above indicate that no less important than feeble-mindedness is feeble-motivation and that no less important than powerful-mindedness is powerful-motivation. In the conquest of poverty, with its resultant sickness, mortality, neglect and misery not only the inability to understand but the inability to act with energy must be eliminated. It is not so much lack of intelligence that stands out in the mind of the average social worker in considering the causes for the failure of the families who become dependent upon charity; as far as the causes are individual rather than social, it is shiftlessness, laziness, lack of energy, that characterize the poor. Recent studies of the earnings of morons indicate that many feeble-minded people are earning fairly high wages. The army mental tests showed that many a day laborer has an intelligence quotient equal to that of the average skilled worker, while many a clerk has an intelligence quotient equal to that of the average professional or business man (*157.3*). It may be found that one reason for this imperfect correlation between mentality and success in life is that a high endowment with energy-capacity may carry a man to success in spite of inferior intelligence, while superior intelligence is of little value without the energy, initiative and persistence to apply it.

It is clear then that child welfare would not be promoted by a radical reduction in the energy of the parent stock. The other extreme may be illustrated by the pioneers of the pioneers—the wilderness breakers.

Child Welfare and the Ultra-Frontier

The energy of the pioneer in itself, however, is not necessarily associated with desirability for parenthood. This fact is emphasized by the contrast which appears at a number of points between the

three groups of pioneers—the wilderness breakers, the cabin builders and the settlers. The contrast is highly significant, for the settlers were by far the most numerous group, and the most likely to leave offspring. The wilderness breakers were apparently more extreme and unregulated in their characteristics than the other groups. Their bravery was very likely to take the form of rashness and recknessness. The references to vice and dissipation refer chiefly to this group. The cabin builders were distinguished for their restlessness. They are noted especially for their emotionalism of the wilder and sterner type, for their physical health, bravery, and recklessness, and not so much for enterprise, tenacity and kindly emotions. The settlers stand out from these other two groups as characterized especially by constructive energy—ambition, industriousness, determination and initiative. They are noted for sympathy and hospitality, for their self-sufficiency and their democracy. The emotional excitement which took the forms of enthusiasm, ardor, passion, vice and wildness in the earlier pioneers appeared mainly as religious emotionalism and sternness in the settler. The settlers were notably brave, yet recklessness, carelessness of the future, extravagance, and waste are rarely asserted of them and even frugality and thrift are mentioned among their characteristics.

These fundamental differences between the types probably indicated an actual difference in vital potential. The extremely energetic naturally forged to the front in the conquest of the wilderness, and cast off restraints most completely. Yet aside from such differences in energy endowment the divergence seems to have been a result of the presence in the settler of certain directive circumstances, habits, ideals and traditions which were absent among the wilderness breakers. First, the settlers were most of them married, whereas the explorers, scouts, miners, cowboys and trappers who composed the wilderness-breaker group almost invariably either were unmarried or were separated from their families. Hence the former type had always before them the necessity of providing for and protecting a wife and usually a large family, while for the wilderness-breakers that responsibility was either wholly absent or was so far off as to exert but a faint influence upon action. A second factor was found in the traditions of character and self control which were potent in the settlers

but which for several reasons were usually absent in the wilderness-breakers. Their presence in the settlers was due to the dominance among them of New Englanders and of the Scotch-Irish and other groups whose original migrations were religiously motivated. The ideals of the old New England were perpetuated by the tendency of New Englanders to emigrate in groups and to carry with them the church, school and town meeting. Even though the forms tended to drop away with each successive generation, the larger view of things, the essentially ethical reaction toward life gave a direction to the activity of the settlers which persisted until the recrystalization of society established these traditions in a conserving social fabric. The wilderness-breakers were carried by their excessive and restless energy farther from the influence of responsibilities, traditions and regulations.

It should be noted, however, that the restrictions tolerated by the settlers were primarily directive rather than obstructive. While the miners were toiling fiercely for gold and spending it recklessly in excitement, and while the cabin builders were plunging restlessly on into the wilderness, the settlers were bending their energy to clearing and improvement of land, the raising of crops and the accumulation of property. For the wilderness breaker any momentary excuse for activity was sufficient to call forth his energy; but the responsibilities and traditions of the settler directed his vitality along channels where it would serve his higher ideals.

The Advantages and Dangers of Pioneer Energy

Three contrasted groups have thus been presented: first, the residual New Englanders left behind by the pioneers; second, the wilderness-breakers and cabin builders who forged ahead in the migration; and third, the settlers who formed the great body of the pioneers. The first group clearly lacks elements essential in desirable parents. Both its deficiency of innate energy, and the decadence of its institutions renders this un-pioneer stock unfit to be the parents of the finer type of children. The second group, while it displayed an entirely adequate endowment of energy-capacity, lacked the directive traditions and ideals necessary to turn its activity into safe and useful channels.

The third group, made up of the pioneers proper, combined high capacity for energetic action and emotion with idealism and

social traditions such as tended to direct its energy into productive activity. It must be recognized that even in this group undesirable characteristics appear. The high rates of homicide and divorce in recently settled states, and the tendency to litigation are adverse counts in estimating the value of pioneer characteristics from the standoint of child welfare. On the other hand ambition, warmth of emotional life, absence of illiteracy, high percentages of school attendance, resourcefulness, courage, readiness to respond to a national emergency, tenacity, genuineness, and capacity for coöperation are qualities of first importance in estimating the desirability of parent stock. The children of the future need all of the pioneer energy that can be given them. With it their welfare demands the development of safeguards against the dangers into which unregulated energy is likely to lead.

15. SUMMARY OF CONCLUSIONS FROM CHAPTER III

1. Statistical correlations indicate that interstate migrants in 1830 were characterized by high fecundity, but that the reverse was true in 1910, that westerners in the sixties tended to be tall, and ready to furnish Civil War recruits, that interstate migrants to rural districts have had high divorce, homicide and school attendance rates, with low illiteracy rates, that native migrants have included large quotas of lawyers and journalists, that the frontier states produced relatively few distinguished persons while cities have both attracted and produced large number of the potentially distinguished.

2. Observers report that the pioneers were characterized by executive and emotional intensity, by mental and physical vigor, by courage, recklessness, tenacity, defiance of legal, social and moral formalities, by self-reliance and by capacity for coöperation.

3. Residual rural New Englanders are widely reported as lacking most of the characteristics listed in the preceding paragraph.

4. The basis of the pioneer character was a high endowment of nervous energy, acting in an environment where traditions, conventions, and legal and economic restraints were largely absent.

5. Innate differences between persons in their nervous energy might be explained in ways consistent with the best psychological thinking.

6. The fundamental cause for the high energy of the pioneer was the action of expulsive, attractive and winnowing selection in the migratory process.

7. Recent interstate and rural-urban migrations have also apparently tended strongly to select the energetic and intelligent.

8. The characteristic of being energetic tends to be transmitted by heredity.

9. The character of the American people as a whole is strikingly parallel to that of the pioneer.

10. The type of individual left behind in interstate migrations, and the extreme type of ultra-pioneer, were neither of them as desirable as parents as were the pioneer settlers.

11. The welfare of the coming generation can best be promoted by a greater endowment of energy under better control.

IV. SELECTIVE MIGRATION IN IOWA

In 1850 Iowa was on the frontier and was being settled by the pioneers whose characteristics have been discussed in previous chapters. In 1910 Iowa was reported as the only state in the United States which had lost population during the preceding ten years. The analysis of interdivisional migration (see page 36) showed that the West North Central States, of which Iowa is one, have been among the heaviest losers in recent decades through rural emigration. Iowa, therefore, is a particularly appropriate state to study for details as to the operation and the effects of the recent type of migration. The fact that Iowa has a state census at dates midway between the dates of the federal censuses facilitates such an inquiry.

16. THE MEASUREMENT OF RECENT MIGRATIONS IN IOWA

The application to Iowa data of the age-distribution method of measuring migrations involves certain special problems. The first of these is due to the fact that Iowa is not a part of the Registration Area, and does not have complete registration of deaths. This makes necessary the estimation of survival rates by methods less direct and accurate than those used for the United States as a whole. The second problem lies in the use of state census data in conjunction with federal census reports for the state, so as to reduce the intercensal periods to five instead of ten years. The state censuses report age distribution according to different age groupings than those used by the federal census, so that extensive interpolations must be made. Also the question arises whether the state censuses are of the same degree of accuracy as the federal censuses. These special problems will be discussed in detail in the next few pages.

Death Rates

The incompleteness of the death reports published for Iowa by the state authorities is presumable in view of the fact that the government has not admitted the state to the registration area; but the number of deaths reported may be used as a lower limit, above

which the true number of deaths must lie. Moreover since the variations in the death rates from one community to another are determined chiefly by the age and color distributions of the respective populations and the proportions of the respective populations living in cities, it is possible to make fairly accurate estimates of the deaths by ages in Iowa by weighting according to Iowa conditions the death rates by ages in the cities and the rural districts of the registration area in 1910. No correction for chronological changes has been attempted. In as much as Iowa is a state where the high economic level of the population insures a relatively low death rate, the estimate based on conditions in the registration area may safely be taken as a maximum rate for the state. A third factor which reduces the error from incorrect death rates is the fact that the death rates are lowest at the ages in which migration is most frequent. The force of these three factors is more readily appreciated by examining Table 23 and Chart 8 in

TABLE 23

IOWA DEATH RATES

per 1000 by ages, as calculated from state reports for 1915 and as estimated from rural and urban death rates in the original registration states in 1910. Based on data from *106*; *111*: pp. xix, lxxiv. See also *151*.

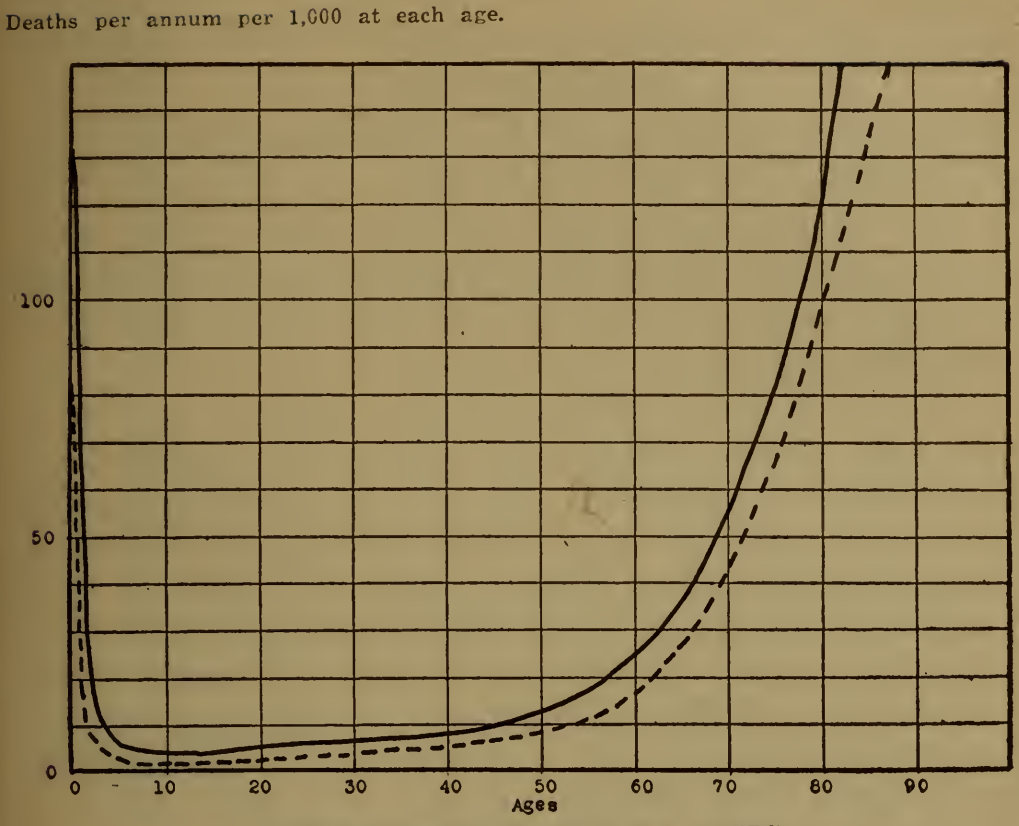
	Ages						
	0-1	1-5	5-10	10-20	20-30	30-40	40-50
State reports	56.1	4.6	1.5	1.7	3.2	4.3	6.4
Registration area	108.4	11.0	2.9	2.9	5.3	6.7	9.4
	50-60	60-70	70-80	80-90	90-	All ages	
State reports	11.5	26.7	66.6	132.7	192.2	9.5	
Registration area	18.1	36.2	82.0	174.9	334.9	14.5*	

*Weighted according to age distribution of Iowa population.

which the death rates by ages in Iowa in 1915, as estimated from state reports, are compared with the death rates by ages estimated by weighting the death rates by ages in the original registration states for males and females in cities and in rural districts according to the importance of corresponding groups in Iowa.

The effect of this difference in estimated death rates upon the estimate of migration may be illustrated by taking the period of life in which migration is most frequent—10 to 30 years of age. In 1900 there were 864,627 persons of these ages returned for Iowa by the federal census (*125* p. 374). If the death rates estimated from the registration area were operative in the state,

CHART 8



IOWA DEATH RATES BY AGES.

as calculated from data reported for 1915 by state officials and as estimated from death rates for rural and urban districts of the original registration states in 1910. (See Table 23.)

approximately 822,500 of these persons would survive in 1910 (at which time their ages would of course, range from 20 to 40 years). The 1910 census returned only 703,043 persons 20 to 40 years of age in Iowa. (*125* p. 374) This would leave 822,500—703,043, or approximately 119,500 persons who presumably must have left the state during the years 1900 to 1910 in excess of the number of these ages who entered the state during the same period. This would amount to a net emigration of 14.5 percent of the survivors. If on the other hand the state reports were correct, and the low death rates which they show were actually in operation the result would indicate that 837,500 persons survived instead of the 822,500 indicated by the registration area rates. The net emigration in this case would be approximately 134,500 instead of 119,500, or 16.1 percent instead of 14.5 percent of the survivors. These estimates, as indicated above, may be assumed to be the upper and lower limits between which the correct number lies.

The probable percentage of error in estimates of emigration for the older age groups would tend to be larger, though the absolute error in number of emigrants would be much smaller. Of all persons five years of age or over in the state in 1900, the net emigration during the decade 1900-1910 was 232,600 if the registration area death rates are used, and 282,500 if the state report rates are used. If, therefore, the only source of error were the death rates, we might say with considerable finality that between 230,000 and 280,000 persons left the state in excess of those entering it between 1900 and 1910.

State vs. Federal Census Totals

Two other sources of error must, however, be examined. The first of these is suggested by the contention of the state census authorities that the 1900 census returns for Iowa were 100,000 too large and the 1910 returns 75,000 too small. (*111*: p. xviii). This contention is made, as the report states, "without any pretense of information on which to base the assumption." The object avowed is to secure an estimate of population increase "more in harmony with known facts" and to show a steady increase in population instead of irregular gains and losses from 1900 to 1915.

If these assumptions of the state authorities were correct, the amount of emigration from the state during the decade 1900-1910 would be less than half the estimate given above, while the migration between 1910 and 1915, instead of being a gain of 8,000 would be a loss of 80,000 or so. The best test as to accuracy of the federal and state census returns would be a comparison with independent sources of information. Probably the most satisfactory

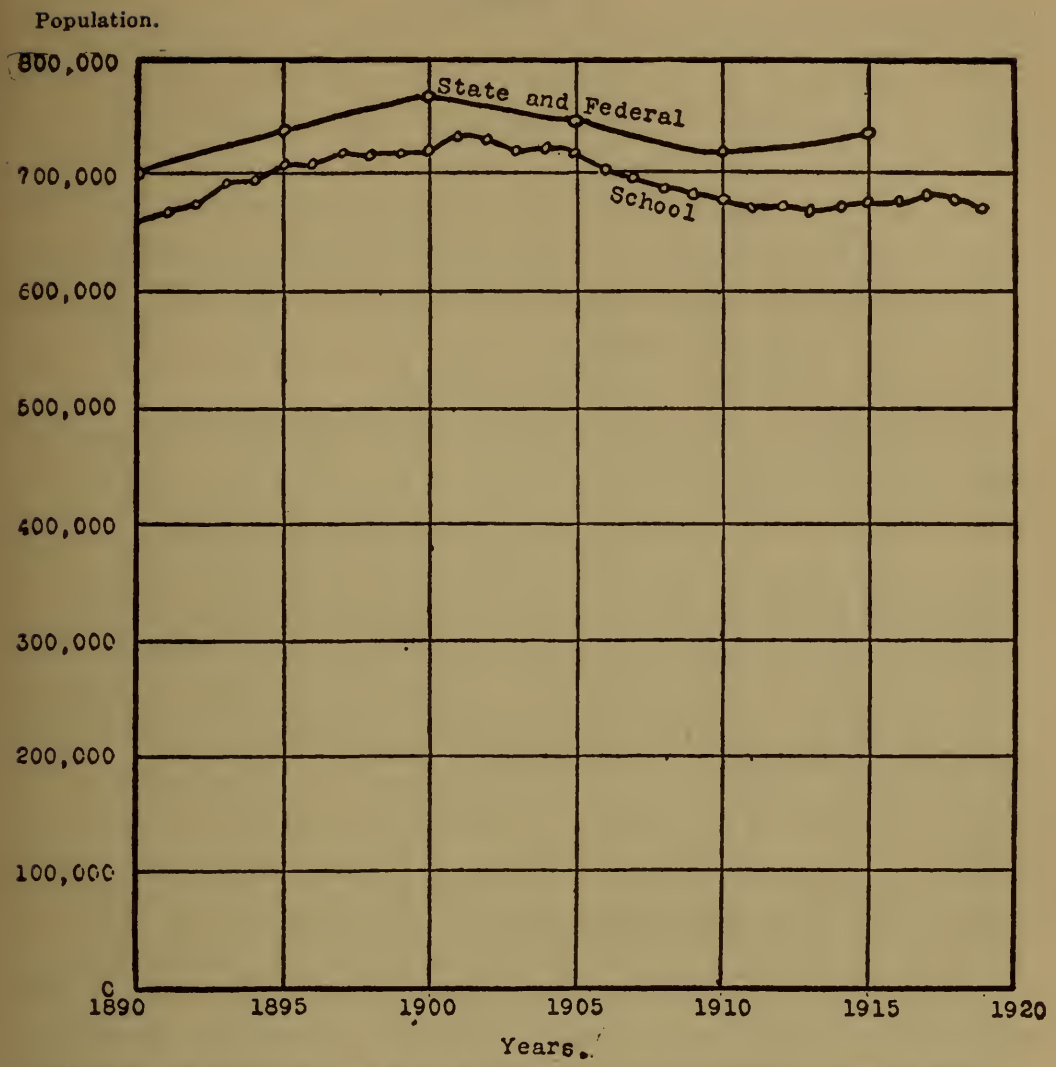
TABLE 24

Federal, State and School Census Returns Compared

Number of persons five to 20 years of age in Iowa as reported by the school, state and federal census, 1890-1919. Sources of data *110*: p. xi; *109*; *111*: p. lvix; *121*: p. 215: *125*: p. 374: *112*.

Year	State and federal returns	School Enumeration	Ratio
1890	701,182	660,495	106.2
1895	736,808	712,941	103.3
1900	767,870	731,154	105.0
1905	749,512	716,882	104.5
1910	721,392	677,004	106.6
1915	736,925	678,192	108.7
1919		674,369	

CHART 9



STATE, FEDERAL AND SCHOOL CENSUSES COMPARED.
Iowa population five to 20 years of age inclusive, as reported by school ennumerations, and as returned by the state and federal censuses, 1890-1919. Sources of data same as for Table 24.

auxilliary index of population is the school census, under which enumerations are made every year of the number of persons five to 20 years of age inclusive. A comparison of the school census with the state and federal returns for the same age period is given in Table 24. Chart 9 shows the comparison, with the intervening years of school census recorded.

These data corroborate the general trend of the state and federal census. Both sources of information agree that the population of the ages stated increased from 1890 to 1900, that it was lower in 1905 than in 1900, and still lower in 1910. They both indicate an

arrest of the downward trend before 1915. This close correspondence between entirely independent sources of information removes all ground for the guess on the part of the state census authorities that the federal census for 1900 overstated and for 1910 understated the true population. The probability seems strong that both state and federal censuses are close approximations to the truth. If any presumption of inaccuracy is created by the comparison, it is that the 1915 state census was relatively more complete than those preceding.

Age Distribution

A third source from which error might enter into the method herein used for estimating migration, is the possibility that the age distribution of the population may be incorrectly returned by the state or federal censuses. This error might be of two types: either a constant tendency on the part of one census after another to understate or overstate the number of persons in a given age group, or a tendency to variation now in one age group, now in another. The first source of error may be operative in the early years of life as suggested earlier in this study (page 21.) The effect of an understatement of the number of persons under five years of age, would be to produce at the census five years later the effect of an ingress of persons five to nine years of age, since a large number of children missed as babies would be enumerated at later censuses. This possible source of error is aggravated in the Iowa data by the fact that the 1905 state census reports an unusually small number of infants. The fecundity indices for the last four censuses show a marked slump in 1905 which is difficult to account for. As shown in Table 25 the decrease in the index was .135 in the fifteen years 1900-1915, or .009 per year. From 1900 to 1910 it was .086

TABLE 25

Fluctuations in Reported Proportions of Children

Fecundity indices derived from state and federal censuses of Iowa 1900-1915; Sources of data *111*: p. lvix; *123*: p. 38; *125*: p. 374.

Census	Children under 5 years of age	Women aged 21-44	Fecundity Indices Col. 2 ÷ Col. 3
1.	2.	3.	4.
1900 (federal)	263,422	372,021	.706
1905 (state)	233,843	380,720	.613
1910 (federal)	236,063	380,907	.620
1915 (state)	237,760	415,984	.571

or .0086 per year. From 1900 to 1905 the decrease reported was .093 or .0186 per year—more than twice the normal rate. If the decrease in fecundity was really gradual, the number of children reported under five years should have been 252,000 or 18,000 greater than the number shown by the 1905 census.

In order to obviate this possible source of error, for which no accurate corrective is available, the migration of persons under

Habitual errors in other age groupings may occur. The tendency to concentration on years ending in zero may increase the number of persons reported in certain age groups. This, however, would tend to produce excess and deficiency alternately in the estimated number of migrants in successive five year periods. No such tendency appears in the actual results.

Hap-hazard errors in age groupings would be subject to discovery by comparing the estimates of migration for the period 1900-1905, with estimates for 1905 to 1910 and 1910 to 1915. No important error is apparent from such comparisons. The chance of such error is increased by the fact that the state census makes its returns in irregular age groupings—under five years, five to 10 years, 10 to 18, 18 to 21, 21 to 45, and 45 and over. As a result it has been necessary to interpolate by graphic methods in order to secure age groupings comparable with those of the Federal Census.

To summarize the matter of error in the age distribution method as applied to Iowa data, it may be said that the use of weighted registration area death rates in the absence of reliable Iowa death rates means that the estimate of the total net number of persons leaving the state of Iowa may be as much as ten percent too low,

TABLE 26

Age Distribution of the Population of Iowa

by sexes, arranged according to the groupings of the state census, according to federal and state returns, 1900-1915. Sources of data *110* p. xl with corrections based on pp. 2-382; *111* p. lvix; *125* p. 374.

Sex and dates	Ages							
	All ages	0-5	5-10	10-18	18-21	21-45	45-	Unknown
Males								
1900	1,156,849	133,621	129,316	192,440	66,174	409,586	222,359	3,353
1905	1,132,251	118,877	122,521	188,436	66,209	394,638	241,570	.....
1910	1,148,171	119,591	115,852	179,825	69,231	406,598	254,544	2,530
1915	1,212,988	120,958	121,914	180,950	69,032	440,389	279,745	.....
Females								
1900	1,075,004	129,801	127,326	186,684	65,930	372,021	191,374	1,868
1905	1,077,815	114,966	119,843	184,873	67,630	380,261	210,242	.....
1910	1,076,600	116,472	112,570	176,188	67,726	379,682	222,741	1,221
1915	1,145,078	116,802	118,865	176,431	69,733	415,984	247,263	.....

TABLE 27

IOWA NET MIGRATION

Estimated net migration into or out of (—) Iowa by age periods during the pentads 1900-1905, 1905-1910 and 1910-1915. Sources of data *106*; and Table 26.

Ages at beginnings of pentads	1900-1915			1900-1905		1905-1910		1910-1915	
	Both sexes	Males	Females	Males	Females	Males	Females	Males	Females
Five and over	—224,900	—107,500	—117,400	—74,450	—55,600	—38,700	—64,200	5,650	2,400
5-9	—39,600	—19,200	—20,400	—8,200	—10,000	—8,700	—8,300	—2,300	—2,100
10-14	—8,000	—6,700	—1,300	—6,800	—2,200	—4,100	—3,700	4,200	4,600
15-19	—21,500	—11,900	—9,600	—8,000	—4,800	—2,700	—8,600	—1,200	3,800
20-24	—50,100	—23,600	—26,500	—11,800	—10,700	—6,900	—13,600	—4,900	—2,200
25-29	—40,650	—19,750	—20,900	—12,250	—9,600	—7,800	—10,700	300	—600
30-34	—15,700	—6,900	—8,800	—10,400	—5,000	—1,100	—4,400	4,600	600
35-39	—19,350	—8,700	—10,650	—7,900	—4,150	—2,700	—5,100	1,900	—1,400
40-44	—10,100	700	—10,800	—4,100	—5,300	300	—4,500	4,500	—1,000
45-49	—6,500	—3,500	—3,000	—2,800	—1,400	—800	—1,000	100	—600
50-54	—19,850	—10,850	—9,000	—2,050	—2,400	—5,100	—4,200	—3,700	—2,400
55-59	—3,550	—2,600	—950	—800	—1,950	—2,100	—700	300	1,700
60-64	950	1,050	—100	550	—250	—400	0	900	150
65-74	5,350	3,050	2,300	1,300	1,300	700	300	1,050	700
75-84	8,000	3,700	4,300	1,600	2,350	400	—100	1,700	2,050
85-	200	600	—400	300	200	—200	—800	500	200
Unknown	—4,500	—2,900	—1,600	—3,100	1,700	2,500	1,200	—2,300	—1,100

but is probably much more nearly correct than that; that there may have been a slight fluctuation in the completeness of the census returns, involving particularly a deficiency in the 1905 census as compared with 1915, which would have the effect of understating somewhat the actual amount of emigration between 1905 and 1915, and finally that the age distribution is not probably the source of serious error except in the earliest age group, which has been omitted for that reason. The effect of the method used, therefore, is to understate the amount of emigration from Iowa, especially in recent years.

17. ESTIMATED AMOUNTS OF EMIGRATION AND IMMIGRATION

The results of the application to Iowa in recent pentads of the above-described method of estimating migration are given in Table 27.

Foreign-Born Migration

Table 27, it should be noted gives a summary picture of the net movement of the population as a whole. Closer study of the data reveals the fact that there have been subcurrents flowing often in directions opposite to that of the main stream. The state census reports (*111*: p. 468) that in 1915 there were 29,883 persons in Iowa who had been in the United States less than five years, and that there were in addition 25,002 persons who had lived in the United States between five and 10 years—a total of 54,885 persons who must have entered the state between 1905 and 1915. From another angle, the report shows (*111*: p. lv) that while the

TABLE 28

Nationalities on the Increase Among Iowa Foreigners

Nationalities among the foreign-born of Iowa having the largest increases between 1905 and 1915, with the increases, and a summary of decreases among nationalities having a decrease. Source of data 111 p. lv.

Nationality	Increase or decrease (—)
Russian	6,071
Greek	4,678
Italian	4,616
Austrian	3,615
Other increasing nationalities	9,727
Total increase	28,707
Nationalities showing decrease	—46,825
Net decrease	—18,128

total number of foreign-born persons in Iowa decreased in the decade 1905-1915, certain nationalities increased by a total of 28,707 persons. The most prominent of these increases are given in Table 28.

This fails to show the true influx of foreigners, since many of those who were in the state in 1905 died or left Iowa before 1915. The most reliable way of getting at the approximate amount of net immigration to Iowa by foreign-born persons is to use the same method as that applied to the general population. The possible errors noted in connection with that method apply with somewhat different force here. Reliable death rates for the foreign-born in Iowa are difficult to estimate. The dominant foreign stocks are German, Scandinavian, and British,—groups with presumably much lower death rates than the more recent immigrants who are more prominent in the registration states. Death rates of the foreign-born are not differentiated in Glover's tables according

TABLE 29

FOREIGN IMMIGRATION TO IOWA

Estimated net migration of white persons born outside the United States into or out of (—) Iowa, by age periods, during the pentads 1900-1905, 1905-1910, and 1910-1915. Sources of data *106*; *110*; *111*; *122*; *125*.

Ages at beginnings of pentads	1900-1915		
	Both sexes	Males	Females
All ages	53,500	35,900	17,600
0	3,400	1,700	1,700
0-4	5,700	2,900	2,800
5-9	3,300	2,000	1,300
10-14	10,900	7,100	3,800
15-19	21,400	14,900	6,500
20-24	10,600	7,900	2,700
25-29	1,400	0	1,400
30-34	—2,800	—1,200	—1,600
35-39	—1,600	—1,300	—300
40-44	3,500	3,000	500
45-49	—2,900	—2,200	—700
50-54	—4,200	—1,300	—2,900
55-59	800	—300	1,100
60-64	1,900	1,000	900
65-69	1,200	1,300	—100
70-74	1,200	600	600
75-79	100	0	100
80-84	200	200	0
85-89	—100	—100	0
90-	100	100	0
Unknown	—600	—400	—200

to urban or rural residence, and Iowa's foreign residents are chiefly rural while those of the registration area are more likely to be urban dwellers. For these reasons it has seemed best to use the same death rates as were used for the entire population. These rates, if correct for the total population, are probably too low for the foreign-born. If they are too high for the general population, as seems probable, it is not unlikely that they are approximately correct for the foreign-born.

As to age grouping, the fact that the number of foreign-born under one year of age is negligible removes any appreciable error from that source. On the question of the accuracy of totals of foreign population there is no independent check available.

The use of this method brings the result shown in Table 29.

Whereas Table 27, shows an exodus from the state totalling 224,900 in fifteen years, Table 29 shows that in the meantime at least 53,500 foreign-born persons have entered the state, of whom 44,400 were over four years of age at the beginnings of the pentads in which they migrated. Now the net number of native-born persons leaving the state at a given age is equal to the net migration of all nativities out of the state at the same age, minus the net foreign migration out of the state at that age. In other words, it is the algebraic difference between the total and the foreign net emigration. Hence it becomes evident that at least 224,900 plus 44,400 or 269,300 native-born persons left the state between 1900 and 1915 in excess of those who entered during the same period.

Migration from Other States

How many natives of other states migrated into Iowa during this period, it is more difficult to estimate. The general trend of migration is indicated by census reports as to state of birth. If the number of persons born in Iowa, but living in other states be subtracted from the number of persons born in other states but living in Iowa, an index of the cumulative loss or gain through migration is obtained. Table 30 shows the index and its derivation. This table indicates that 250,000 native Iowans left the state between 1900 and 1910 in addition to the number needed to offset deaths among Iowans living in other states in 1900. It also indicates that the number of natives of other states in Iowa has remained fairly constant for at least 35 years, so that new migration to the state must have occurred.

TABLE 30

The Balance of Migration in Iowa

Comparison of the number of Iowa-born citizens living in other parts of the United States with the number of persons living in Iowa but born in other parts of the United States. Sources of data *110*: pp. 504, 508; *111*: pp. 453, 459; *116*: pp. xxxvif; *117*: p. xxxiii; *118*: pp. 328 ff; 125: pp. 700-1.

Date	Natives of other states living in Iowa	Natives of Iowa living elsewhere in the U. S.	Balance of migration
1850	20,240	6,358	113,882
1860	376,081	37,535	338,546
1870	562,708	89,001	473,707
1880	625,650	217,389	408,261
1890	577,088	397,985	179,103
1900	600,353	554,340	46,013
1905	547,847	.....	.....
1910	524,774	801,836	—247,062
1915	542,502	.....	.....

While the states of birth of the native population born outside of Iowa are given, their age distribution is not. It seems probable that this age distribution is closely similar to that of the foreign-born population. In this case, approximately ten percent of such persons would die during a five year period. In this very rough basis the calculations shown in Table 31 are made. The sources

TABLE 31

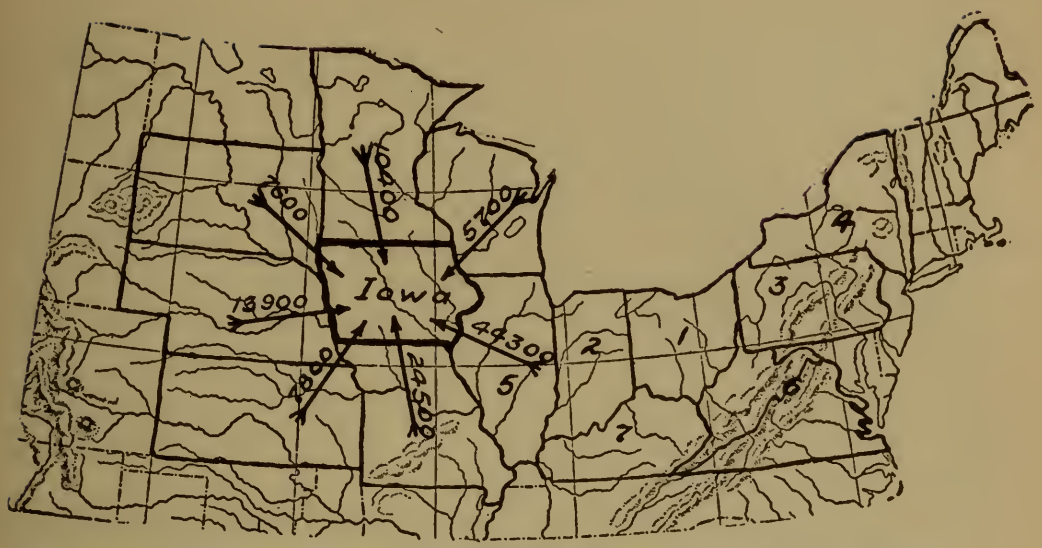
Migration from Other States to Iowa

Rough estimate of net migration to Iowa of natives of other parts of the United States. Sources of data *110*: pp. 504, 508; *111*: pp. liv; *125*: pp. 700-1.

Period	Natives of other parts of the United States resident in Iowa at beginnings of periods	Estimated survivors at ends of periods	Actual residents of Iowa native of other parts of the U. S. at ends of periods	Estimated net migration
1900-1915				109,441
1900-1905	600,353	540,317	547,775	7,458
1905-1910	547,775	492,917	524,774	31,777
1910-1915	534,774	472,296	542,502	70,206

of recent native migration into Iowa, in comparison with early sources, is shown in map form in Chart 10. Estimating migration of native born persons into Iowa on the above basis, indicates according to Table 31, that at least 109,000 such persons entered the state in the period from 1900-1915 in excess of the number of

CHART 10



SOURCES OF RECENT NATIVE MIGRATION TO IOWA.
The seven states contributing the largest numbers of their natives to the Iowa population between 1900 and 1915 are indicated by arrows. For comparison the seven states having the largest numbers of their natives living in Iowa in 1860 are marked with numbers in the order of their rank in this respect.

natives of other states leaving Iowa, and that of these persons, 90 percent came from five adjacent states.

TABLE 32

SOURCES OF RECENT NATIVE MIGRATION TO IOWA

1900-1915

Sources of data same as for Table 31.

State of birth	Net migration to Iowa, 1900-1915
Total of six states	108,500
Illinois	44,300
Missouri	24,500
Nebraska	13,900
Minnesota	10,400
Kansas	7,800
South Dakota	7,600

The large trends of population discussed above are summarized in Table 33. During the fifteen years covered in Table 33, the total net emigration from the state has decreased, immigration of natives of other states and countries into Iowa has increased, and emigration of native Iowans has decreased. The most striking fact is that nearly 400,000 native Iowans moved out of the state

TABLE 33

SUMMARY OF NATIVITIES OF IOWA MIGRANTS

Migrants into and out of (—) Iowa exclusive of children under five years of age at beginnings of each pentad, classified according to general nativity, 1900-1915. Sources of data Tables preceeding.

Periods	Net migration of combined nativities	Net migration of foreign born into Iowa	Net migration of natives of other states into Iowa	Migration out of Iowa of persons born in the United States
1900-1915	—224,900	44,400	109,500	—378,800
1900-1905	—130,050	5,000	7,500	—142,550
1905-1910	—102,900	20,000	31,800	—154,700
1910-1915	8,050	19,400	70,200	—81,550

between 1900 and 1915. If the full facts were obtainable this number would doubtless be larger.

The conclusions in the section on errors in returns of total population (pp. 99 ff.) indicate that the exodus may have been greater in 1910 to 1915 than these estimates show, but there is no question that a decrease in emigration occurred.

The returns of the 1920 census are not yet available in sufficient detail to permit the application of the age distribution method of measuring migration during the decade just past. The totals for Iowa and its leading cities indicate, however, that the gain in population for the state as a whole has been about one-third as large during the past five years as in the preceding pentad, while the

TABLE 34

IOWA POPULATION GAINS AND LOSSES, 1900-1920

(*111* p. 593, and advance bulletins 1920 census)

Population				
Date	State as a whole	Cities over 25,000 in in 1920	Cities 10,000 to 25,000 in 1920	Other districts
1920	2,403,630	411,521	192,615	1,799,494
1915	2,358,066	362,822	190,195	1,805,049
1910	2,224,771	304,514	171,564	1,748,693
1905	2,210,050	270,377	159,481	1,780,192
1900	2,231,853	230,839	149,407	1,851,607

Five year gains or losses (—)								
Date	State as a whole		Cities over 25,000 in 1920		Cities 10,000 to 25,000 in 1920		Other districts	
	Number	%	Number	%	Number	%	Number	%
1920	45,564	1.9	48,699	13.4	2,420	1.3	—5,555	—.3
1915	133,295	6.0	54,308	19.2	18,631	10.8	56,356	3.2
1910	14,721	.7	34,137	12.6	12,083	7.6	—31,499	—1.8
1905	—21,803	—1.0	39,538	17.1	10,074	6.7	—71,415	—3.9

districts outside cities over 10,000 in population have again experienced a loss in population. This loss was not so great as that which occurred between 1900 and 1910, but it is sufficient to indicate that a very pronounced emigration from the rural districts is still occurring. These data are presented in Table 34.

Emigration From Iowa and From New England

An outstanding fact about interstate migration as regards Iowa is that, out of 2,218,420 residents of the United States born in Iowa 801,836, or 36.1 percent were living in other states in 1910. (*125*: p. 700). This does not include natives of Iowa living in Canada and in other foreign countries.

The comparison with New England conditions is striking. Iowa had a larger percentage of its natives reported as living in other states than any of the New England states except Vermont, has had at any census since 1850. The comparison is shown in Tables 35 and 36, and Chart 11.

TABLE 35

The Exodus from Iowa and From New England

Percentages of the natives of Iowa living in other states, compared with corresponding percentages for the New England States, for censuses since 1850. Derived from data in *116*: pp. xxxvi, f; *117*: pp. 616-19; *118*: pp. 328 ff.; *125*: p. 700-1.

State	1910	1900	1890	1880	1870	1860	1850
Iowa	36.1	29.6	28.5	22.8	17.2	16.2	11.1
Maine	26.9	27.9	27.5	24.5	21.2	17.1	11.4
New Hampshire	33.8	33.8	34.1	34.6	34.0	34.5	29.5
Vermont	38.6	40.4	40.9	41.5	42.1	42.1	38.4
Massachusetts	16.1	16.3	17.9	19.7	22.1	22.6	22.2
Rhode Island	21.5	22.3	22.7	24.4	26.5	29.1	29.6
Connecticut	21.5	21.6	23.1	26.1	28.2	32.1	34.5

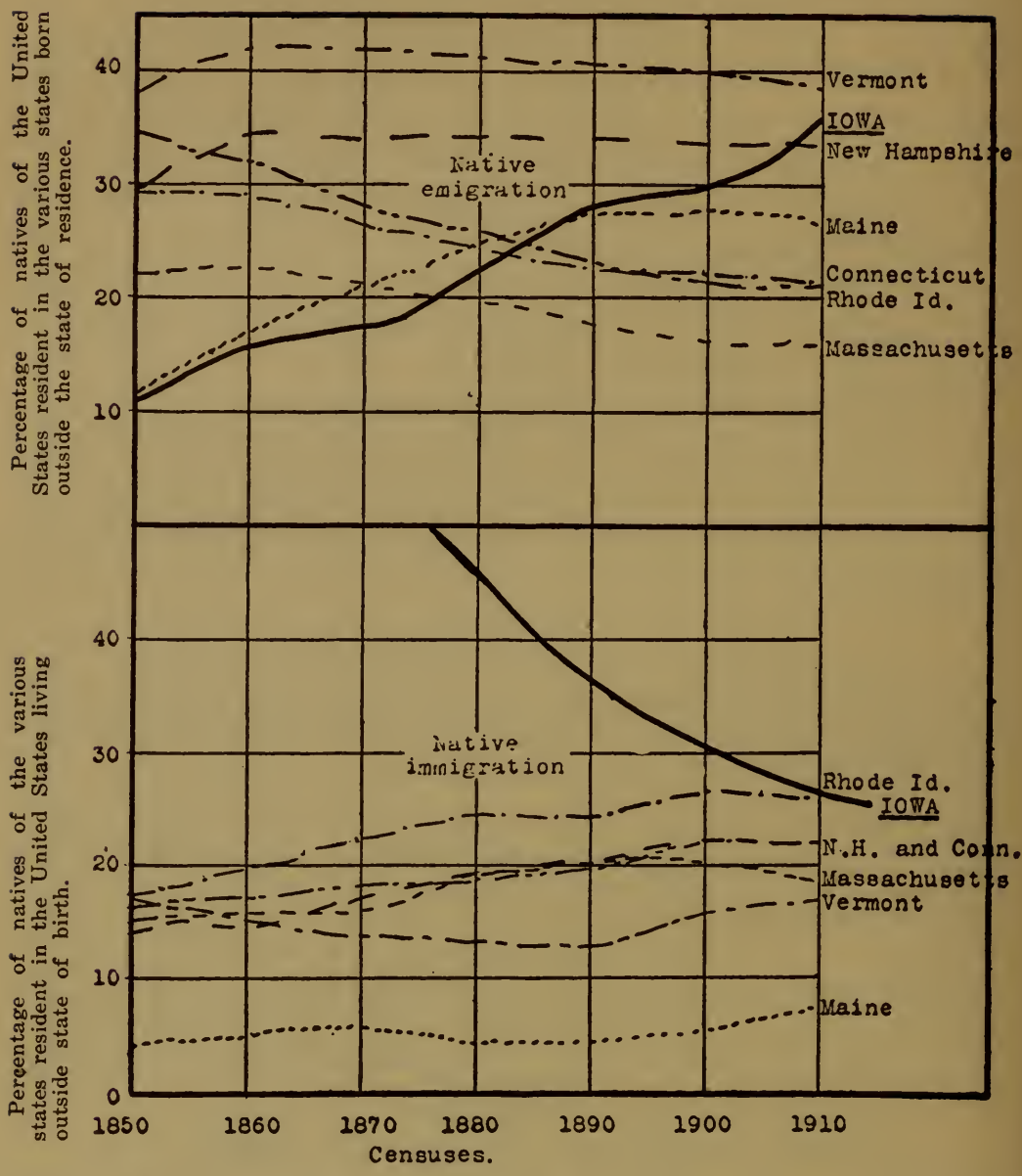
TABLE 36

New Native Blood in Iowa and New England

Percentages of the native white residents of Iowa born in other parts of the United States, compared with corresponding percentages for the New England States, for censuses since 1850. Sources of data same as for Table 35.

State	1910	1900	1890	1880	1870	1860	1850
Iowa	27.0	31.3	36.6	45.9	56.7	66.3	70.5
Maine	8.0	6.2	4.6	4.6	6.1	5.1	4.1
New Hampshire	24.9	24.3	20.7	19.3	16.0	15.7	14.0
Vermont	17.2	16.1	13.2	13.6	13.9	15.2	17.3
Massachusetts	18.9	20.6	20.1	18.7	18.2	17.0	16.2
Rhode Island	26.2	27.0	24.8	24.7	22.5	19.8	17.5
Connecticut	22.3	22.6	19.8	19.2	17.1	14.7	12.0

CHART 11



IOWA AND NEW ENGLAND MIGRATIONS COMPARED.

Percentages of natives of Iowa living elsewhere in the United States compared with similar percentages for the New England states, and percentages of Iowa populations born in other parts of the United States compared with similiar percentages for the New England states, 1850 to 1910. Source, Tables 35 and 36.

18. AGE AND SEX DISTRIBUTION OF MIGRANTS

The age and sex distributions of these human currents are highly significant. Such conclusions as may be drawn on these points for the 15 year period have been compiled in Table 37.

The lack of data as to the sex and age distribution of natives of other states migrating to Iowa leaves this table incomplete. The columns headed "All Nativities" cover the net result to the state of the various streams of migration. The columns headed "Foreign Born" show fairly accurately the net immigration of foreigners. But the column headed "Born in U. S.," while it gives the approximate net emigration of American born persons out of Iowa, does not give any idea of the total amount of migration, since, as was pointed out above, about 130,000 natives of other states moved into Iowa in this period. In order to give a net emigration of 269,300 Americans from Iowa, it is shown in Table 33 that 378,800 persons must have left the state. The age and sex distribution of only 269,300 of these can be safely estimated and these estimates appear in the central column of Table 37.

The age data are summarized in Chart 12. Instead of consisting primarily of men and women along in years who have built up fortunes in Iowa, two-thirds of the emigrants are young people 15 to 34 years of age. These would seem to be chiefly persons who aim to make their start in life in some other state. A subordinate mode occurs at 40 years of age, and perhaps consists of farmers who have tried farming in Iowa and failed, or decided to go elsewhere for various reasons to farm. The mode between 50 and 60 years, containing about 25,000 persons or about one-tenth of all the emigrants is the group usually thought of as typical of the farmers leaving Iowa—the successful ones who have sold out and gone to California or elsewhere to retire on their earnings. This group, it should be noted in Table 27 was larger in the last two pentads than in 1900-1905, in spite of the decrease in emigration in other groups.

The apparent net ingress to the state at ages over 65 may possibly be an actual immigration of eastern farmers later in life. Another explanation might be that the death rate in the upper ages is lower in Iowa than in the registration area, so that the apparent immigrants may be really additional survivors of Iowans of earlier ages.

TABLE 37

Iowa Migrants by Nativities, Ages and Sexes

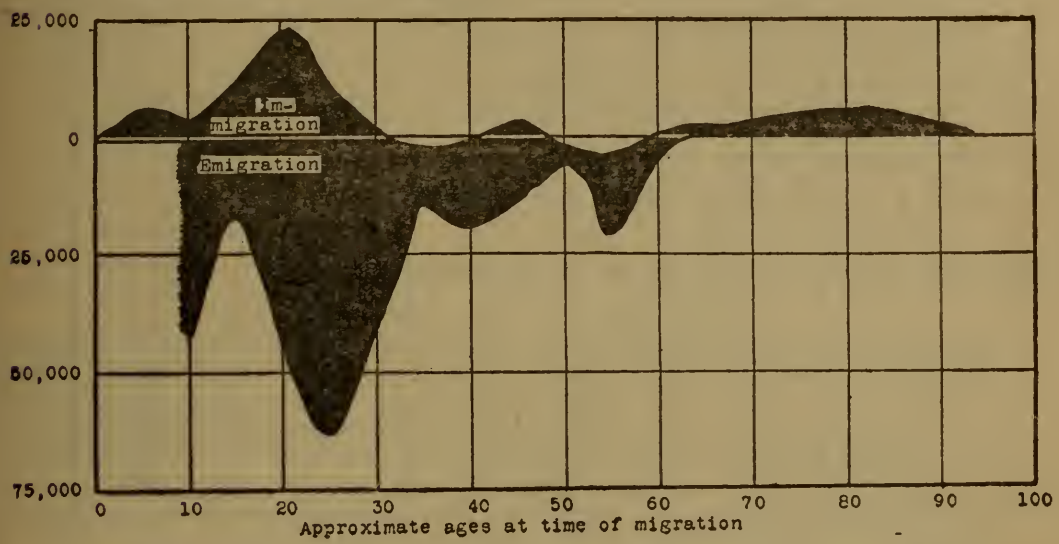
Estimated distribution according to age, sex, and general nativities of migrants into and out of (—) Iowa, exclusive of natives of other parts of the United States migrating into Iowa and of compensating emigration from Iowa, 1900-1915. Derived from preceeding tables.

Ages at beginnings of pentads	All nativities			Born in the U. S.			Foreign-born		
	Both sexes	Males	Females	Both sexes	Males	Females	Both sexes	Males	Females
All ages over 5	—224,900	—107,500	—117,400	—269,300	—138,800	—130,500	44,400	31,300	13,100
5-9	—39,600	—19,200	—20,400	—42,900	—21,200	—21,700	3,300	2,000	1,300
10-14	—8,000	—6,700	—1,300	—18,900	—13,800	—5,100	10,900	7,100	3,800
15-19	—21,500	—11,900	—9,600	—42,900	—26,800	—16,100	21,400	14,900	6,500
20-24	—50,100	—23,600	—26,500	—60,700	—31,500	—29,200	10,600	7,900	2,700
25-29	—40,650	—19,750	—20,900	—42,050	—19,750	—22,300	1,400	0	1,400
30-34	—15,700	—6,900	—8,800	—12,900	—5,700	—7,200	—2,800	—1,200	—1,600
35-39	—19,350	—8,700	—10,650	—17,750	—7,400	—10,350	—1,600	—1,300	—300
40-44	—10,100	700	—10,800	—13,600	—2,300	—11,300	3,500	3,000	500
45-49	—6,500	—3,500	—3,000	—3,600	—1,300	—2,300	—2,900	—2,200	—700
50-54	—19,850	—10,850	—9,000	—15,650	—9,550	—6,100	—4,200	—1,300	—2,900
55-59	—3,550	—2,600	—950	—4,350	—2,300	—2,050	800	—300	1,100
60-64	950	1,050	—100	950	50	—1,000	1,900	1,000	900
65-	13,550	7,350	6,200	10,850	5,250	5,600	2,700	2,100	600
Unknown	—4,500	—2,900	—1,600	—3,900	—2,500	—1,400	—600	—400	—200

Sex contrasts are also worthy of note, though less significant than the age distribution. Among the foreign immigrants to Iowa, males strikingly predominate. This is due almost wholly to a spectacular influx of foreign males in 1905 to 1910 with no corresponding increase in female immigration. In 1910 to 1915 immigration was more evenly distributed as to sex. Among emigrants

CHART 12

Net migrants per five year age period.



AGE DISTRIBUTION OF IOWA MIGRANTS 1900-1915.
Black areas above the zero line indicate amounts of net foreign-born migration into the state at various ages; black areas below the line indicate net emigration of persons born in the United States from Iowa. Data from Table 37.

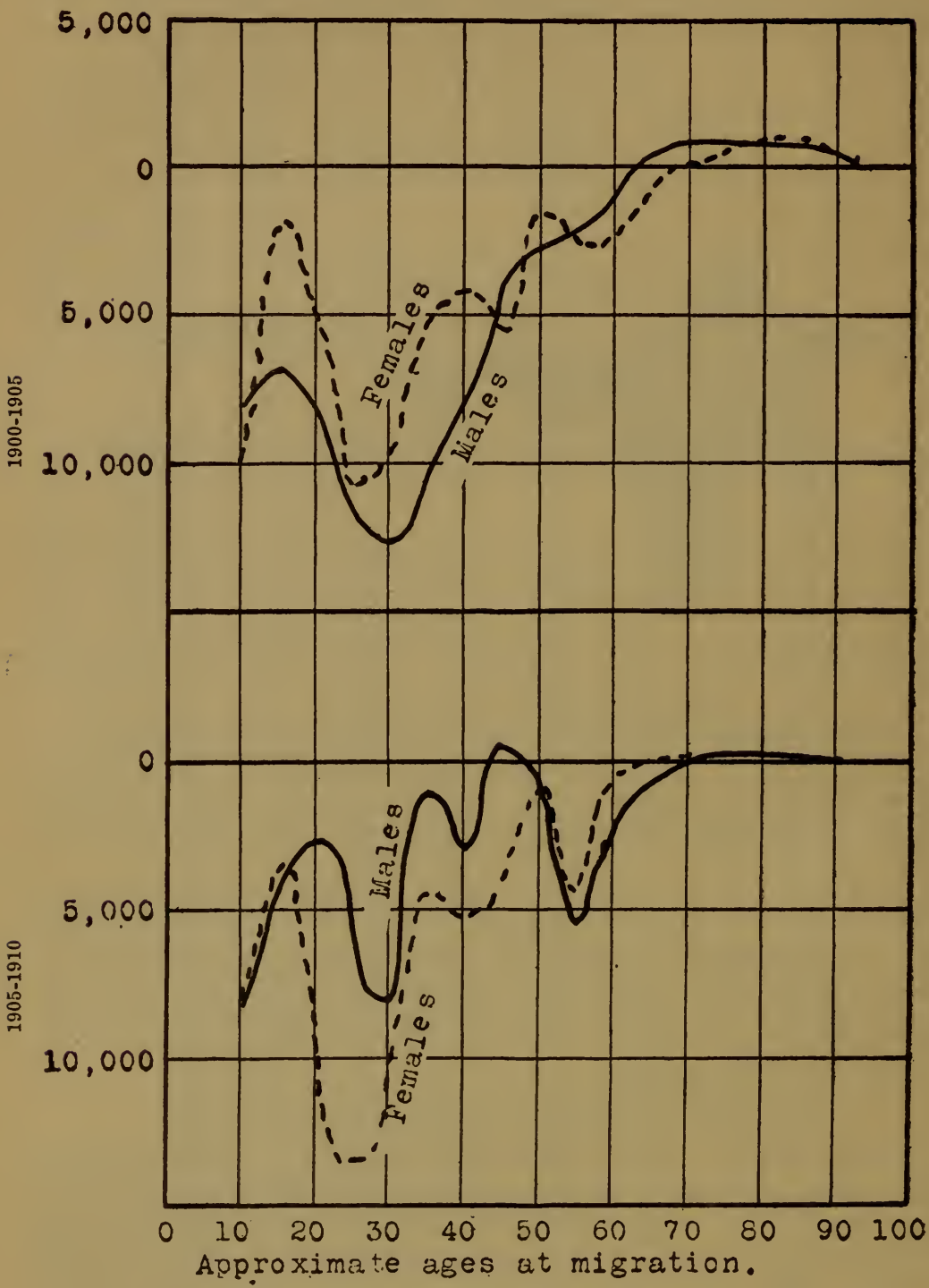
from the state, men predominated decidedly in 1900-1905, while women predominated in 1905-1910. Among emigrants born in the United States men predominate between 15 and 25 years of age, while women predominate between 25 and 50 years of age. Chart 13 bears on these points.

19. DESTINATION OF IOWA EMIGRANTS

Another angle of attack upon the problem of emigration from Iowa is the analysis of the data as to natives of Iowa resident in other parts of the United States. In Table 30 it appears that the number of such persons increased from 554,340 in 1900 to 801,836 in 1910, a gain of 247,496. Obviously however, some of the natives of Iowa resident in other states in 1900 must have died in the intervening ten years. Assuming as in the case of migrants to

CHART 13

Migrants per five year age period per pentad



SEX DISTRIBUTIONS BY AGES OF EMIGRANTS FROM IOWA.
Source of data preceding tables.

Iowa from other states, that the age distribution of these former residents of Iowa is similar to that of the foreign-born in the state, about 20 percent of them would die in 10 years. On this basis, 356,598 natives of Iowa have emigrated to other states in this 10 years, in addition to persons going to Canada and to other foreign countries. The estimate given in Table 30, on the basis of the Iowa population, is 297,250 for the decade 1900-1910. The larger estimate is a much rougher one than the smaller, and it is probable that the true figures was nearer 300,000 than 350,000. However, it is worth while to apply this rough method with a view to getting an idea of where the bulk of the emigrants from Iowa go. The use of this method produces the results shown in Table 38.

A number of important conclusions may be drawn from Table 38. First, it is evident that the interstate migration is not a mere

TABLE 38

DESTINATION OF IOWA EMIGRANTS

Estimated numbers of Iowa-born persons emigrating to the large cities and the small cities and rural districts of other states during the decade 1900-1910. Based on data from *125* pp. 700ff.

Destination	All emigrants to other parts of the United States		Emigrants to cities of over 50,000		Emigrants to districts outside such cities	
	Number	Percent	Number	Percent	Number	Percent
All parts of the U. S.	356,600	100.0	75,000	21.0	281,600	79.0
South Dakota	51,000	14.3	.....	....	51,000	14.3
California	46,400	13.0	12,800	3.6	33,600	9.4
Texas	36,400	10.2	1,200	.3	35,200	9.9
Minnesota	33,400	9.4	9,400	2.6	24,000	6.8
Washington	31,800	8.9	13,300	3.7	18,500	5.2
Nebraska	26,000	7.3	5,200	1.5	20,800	5.8
Colorado	24,300	6.8	5,200	1.4	19,100	5.4
Oklahoma	23,600	6.6	2,000	.6	21,600	6.0
North Dakota	23,300	6.5	.....	....	23,300	6.5
Other parts	60,400	17.0	25,900	7.3	34,500	9.7

interchange between Iowa and other states. Not only is the number of out-going migrants three times as large as the number of incoming native-born persons, but the five states that furnished 90 percent of the incoming migrants (Illinois, Missouri, Nebraska, Kansas, and South Dakota) did not gain and lose compensatory numbers. Illinois contributed about 24,000 migrants to Iowa, and received 19,500 from Iowa, 8,100 of whom went to cities of over 50,000—chiefly Chicago. Kansas lost about 6,200 of its Iowa-born

citizens during the decade, while about 2,700 natives of Kansas moved to Iowa. The other three states made net gains in the interchange—Missouri about 3,300, Nebraska about 20,000 and South Dakota about 48,200.

The trend to the cities is the next striking fact indicated by Table 38. Over one-fifth of the emigrants from Iowa went to cities over 50,000 in size. This is especially significant since less than four percent of the American-born population of Iowa lives in cities of over 50,000, and since the rural districts and not the cities of Iowa are losing through emigration. This trend to cities has increased markedly since 1900. At that census, only 14.9 percent of Iowa-born population of other states lived in the cities of 50,000. In 1910 the percentage in such cities had risen to 18.8, and the percentage of migrants during the decade going to such cities was 21.0. The percentage going to smaller cities is not ascertainable from the 1910 census. In 1900, of the Iowa-born population living in other states 3.6 percent lived in cities between 25,000 and 50,000. It seems entirely safe to assume, therefore, t hat at least one-fourth of the emigrants from Iowa to other states went into the large cities. In addition to this the trend to Iowa cities from rural districts of Iowa must be considered. This will be discussed in the next section.

Of the approximately 75,000 Iowans who emigrated to large cities in other states between 1900 and 1915, two-thirds went to the following ten cities:

Los Angeles	8,900
Seattle	6,800
Chicago	6,800
Portland (Ore.)	5.800
Minneapolis	5,700
Omaha	5,200
Denver	5,200
Spokane	4,400
St. Paul	3,200
Kansas City (Mo. and Kans.)	5,100
Total, 10 cities	57,100

It is the cities of the North-west that are attracting the young men and women of Iowa. Chart 14 presents the chief trends in map form.

Table 38 covers only the emigrants from Iowa to other states, not to other countries. The absence of complete emigration sta-

CHART 14

CHIEF DESTINATIONS OF IOWA EMIGRANTS, 1900-1910. States receiving over 15,000 Iowa migrants to their rural districts during the decade are indicated by solid arrows; cities receiving over 3,000 ar indicated by dotted arrows. Source of data same as Table 38.

tistics by the United States, and of complete immigration statistics by Canada, make it difficult to estimate the number of Iowans migrating to that country. The number going to other countries is probably negligible. Some idea of the migration to Canada may be gained from the fact that between the years 1897 and 1913 an average of 57,500 persons per year entered Canada from the United States. Iowa's proportionate share would have been about 12,600 for the decade. Presumably she contributed more than this quota.

20. THE CURRENT TO THE CITIES

That the rural districts of Iowa have been losing population steadily since 1900 is admitted even by the 1915 state census. The rural and urban population at five year periods for the past twenty-five years as reported in the census are shown in Table 39.

Six Iowa cities for which populations by ages and sex were given in the 1900 Census, were selected for special study. (*125*: p. xxiv) These cities are Dubuque, Cedar Rapids, Des Moines, Council Bluffs, Davenport, and Sioux City. They were the only cities in Iowa having populations over 25,000 in 1900. In 1915

TABLE 39

Rural and Urban Populations in Iowa

Number of persons living in incorporated places and number living outside such places at recent censuses, as reported by the state census. *111* p. xxiv.

Year	Total Population	Urban	Rural
1890	1,911,896	700,162	1,211,734
1895	2,058,069	871,744	1,186,295
1900	2,231,853	973,178	1,258,676
1905	2,210,050	1,067,936	1,142,114
1910	2,224,771	1,118,769	1,106,002
1915	2,358,066	1,277,950	1,080,116

Council Bluffs was no longer one of the six largest cities; Waterloo had taken its place. The cities listed, however, are the only ones for which age data are available for 1900.

Application of the age-distribution method for estimating net migration to these six cities for the three pentads considered above, using the weighted death rates of the cities of the original registration states, produces the results shown in Table 40.

TABLE 40

Migration to the Six Largest Cities of Iowa

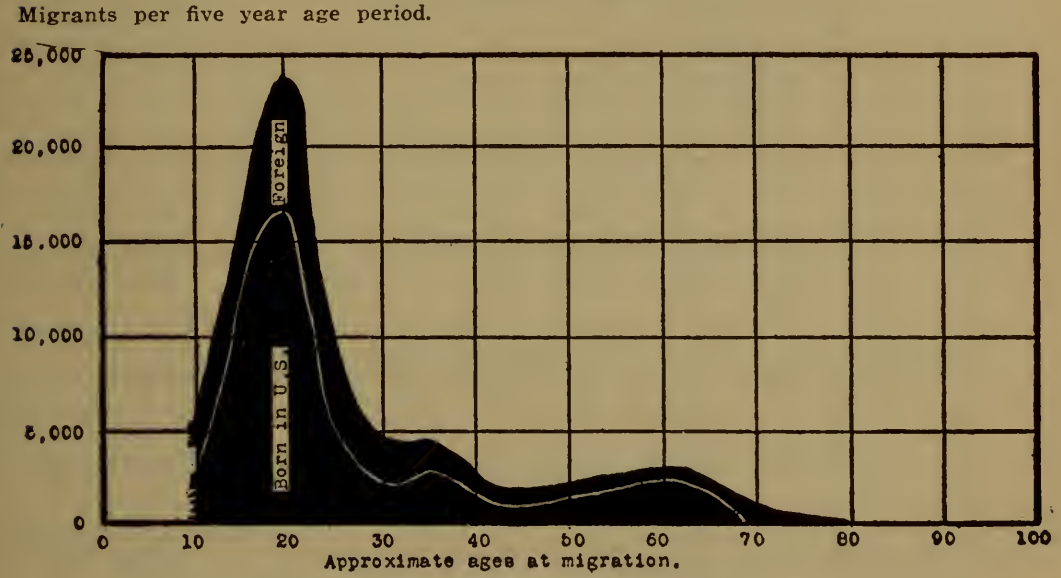
1900-1915, distributed according to nativities, sex and ages. Based on data from *106*; *110*, pp. 2-382; *111* pp. 2-417.

Ages at beginnings of pentads	All nativities			Born in the U. S.			Foreign-born		
	Both sexes	Males	Females	Both sexes	Males	Females	Both sexes	Males	Females
Five and over	75,100	40,700	34,400	51,200	25,200	26,000	23,900	15,500	8,400
5-9	4,000	1,700	2,300	3,100	1,300	1,800	900	400	500
10-14	15,300	5,800	9,500	12,500	4,200	8,300	2,800	1,600	1,200
15-19	23,100	11,400	11,700	16,800	7,200	9,600	6,300	4,200	2,100
20-24	9,200	6,500	2,700	5,200	3,600	1,600	4,000	2,900	1,100
25-29	4,600	3,800	800	2,100	1,900	200	2,500	1,900	600
30-34	4,300	3,000	1,300	2,800	1,900	900	1,500	1,100	400
35-44	4,000	2,900	1,100	2,300	2,000	800	1,200	900	300
45-54	4,100	2,100	2,000	3,000	1,400	1,600	1,100	700	400
55-64	6,400	4,200	2,200	4,900	3,200	1,700	1,500	1,000	500
65-	900	—300	1,200	—1,200	—1,100	—100	2,100	800	1,500
Unknown	—800	—400	—400	—800	—400	—400	.....	....	.....

The contrast between Table 40 and the corresponding tables for the state as a whole is striking. While the state sustained a net loss of 269,300 persons born in the United States, these six cities gained 51,200 native-born migrants. The net losses through native migration were therefore sustained by the rural sections, not by the larger cities. Of the 44,400 foreign-born immigrants, entering Iowa in excess of foreign emigrants, 23,900 located in the six cities and only 20,500 located elsewhere in the state. Instead

of tapering off, the migration to the cities was as large in the five years 1910-1915 as in the ten years 1900-1910. While about 40 percent of the emigration from the state occurred at the ages 22.5 to 32.5 years, half of the migration to cities occurred at the ages 15 to 25. The age distribution of these migrants is shown in Chart 15. A comparison of this chart with Chart 12 brings out

CHART 15



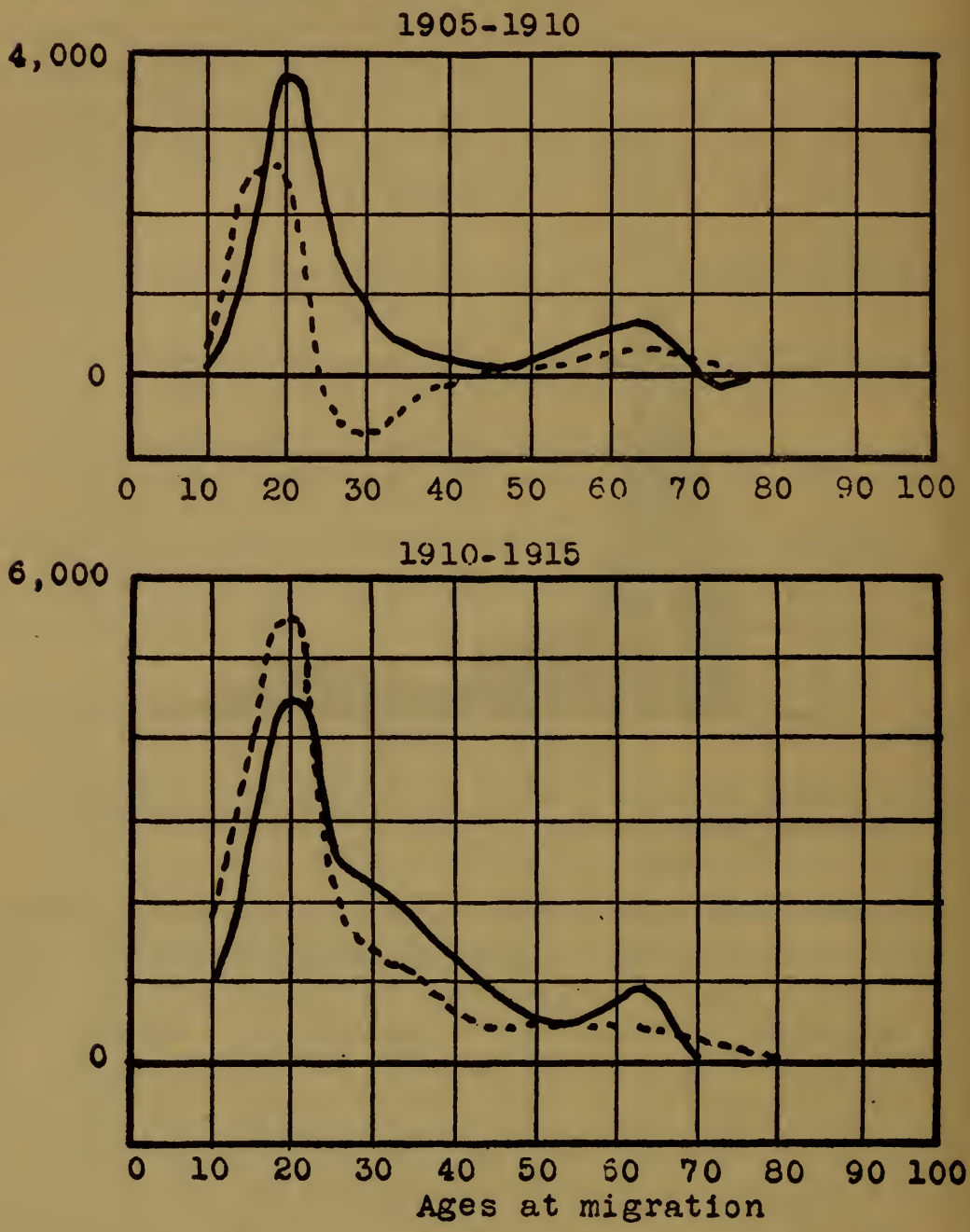
AGE DISTRIBUTION OF MIGRANTS TO IOWA CITIES.
Migrants to six large cities of Iowa from 1900-1915 distributed according to age and general nativity. Source, Table 40.

several striking facts. First of course, the migration is outward in the case of the state, and inward in the case of the cities. Second, Chart 12 suggests that a number of children under 10 years of age probably accompanied their parents out of the state. Chart 15 gives no such suggestions as to the migrants entering cities. Whereas families are leaving the state, single persons are entering the cities. Thirdly, both Chart 12 and Chart 15 show three modes of migration, one in youth, one in middle life, and one in old age. The first two modes are earlier in the city curve than in the state curve. The most frequent age of migration to the city is about 19 years; the most frequent age of leaving the state is about 26. The retired farmer mode is a trifle later in the city curve than in the state curve.

Sex differences are even more striking in city migration than in that from the state. Chart 16 illustrates these differences for the pentads with the smallest and largest migrations. The most strik-

CHART 16

Migrants per five year age period per pentad.



———Males .....Females

SEX DISTRIBUTION OF MIGRANTS TO IOWA CITIES.

Migrants to six large Iowa cities in 1905-1910 and 1910-1915 distributed according to sex and age. Source of data Table 40.

ing contrast is that the girls tend to go to the cities about two years younger than the boys. The migration may be described as primarily a phenomenon of adolescence, since the greatest frequency

occurs in the late teens. This coincides also, of course, with the period at which young people enter industry.

As between the two pentads, the later one exceeded the other especially in the number of females who came to the cities and in the number of older men. There was also a striking increase in the very young groups, suggesting that families may have been more prominent in this later migration.

For comparison with the six cities studied above, migration data for the fourteen other cities in Iowa having a population over 8,000 in 1905 were analized for the decade 1905 to 1910. These data seem to indicate that the smaller city is more likely to be the resort of retired farmers and their wives, of farmer's widows, and of young girls going into industry, while the larger cities attract somewhat more strongly the young men and mature women. These differences are due in part to the fact that the larger cities three-fourths of the immigration between 1905 and 1915 was of foreign-born persons, while in the smaller cities less than half of the immigrants were foreign-born.

21. FECUNDITY AND MIGRATION IN IOWA

The fact which at once strikes the student of statistics of childhood in Iowa is that the number of young children is rapidly decreasing relative to the total population of the state. The number of children under one year of age deported by the census of 1880 was 48,025. In 1910, in spite of the fact that the total population had increased more than a third, the number of children under one year of age was reported as 48,190—a net increase of one-third of one percent, in 30 years.

More accurate as an index of the decrease in the proportion of children in the population is the number under five years of age per 1,000 women of child-bearing age. These ratios are shown for the past eight federal censuses and the latest state census in Table 41, in comparison with similar data for the West North Central States and the United States. This table, the data of which are presented graphically in Chart 17, shows that the number of children in Iowa relative to the number of women of child-bearing age, has fallen to only 40 percent of what it was in 1840. Relative to the fecundity index of the United States as a whole the Iowa index has shrunk from a third larger than the rest of the country to a point definitely lower than other states. The

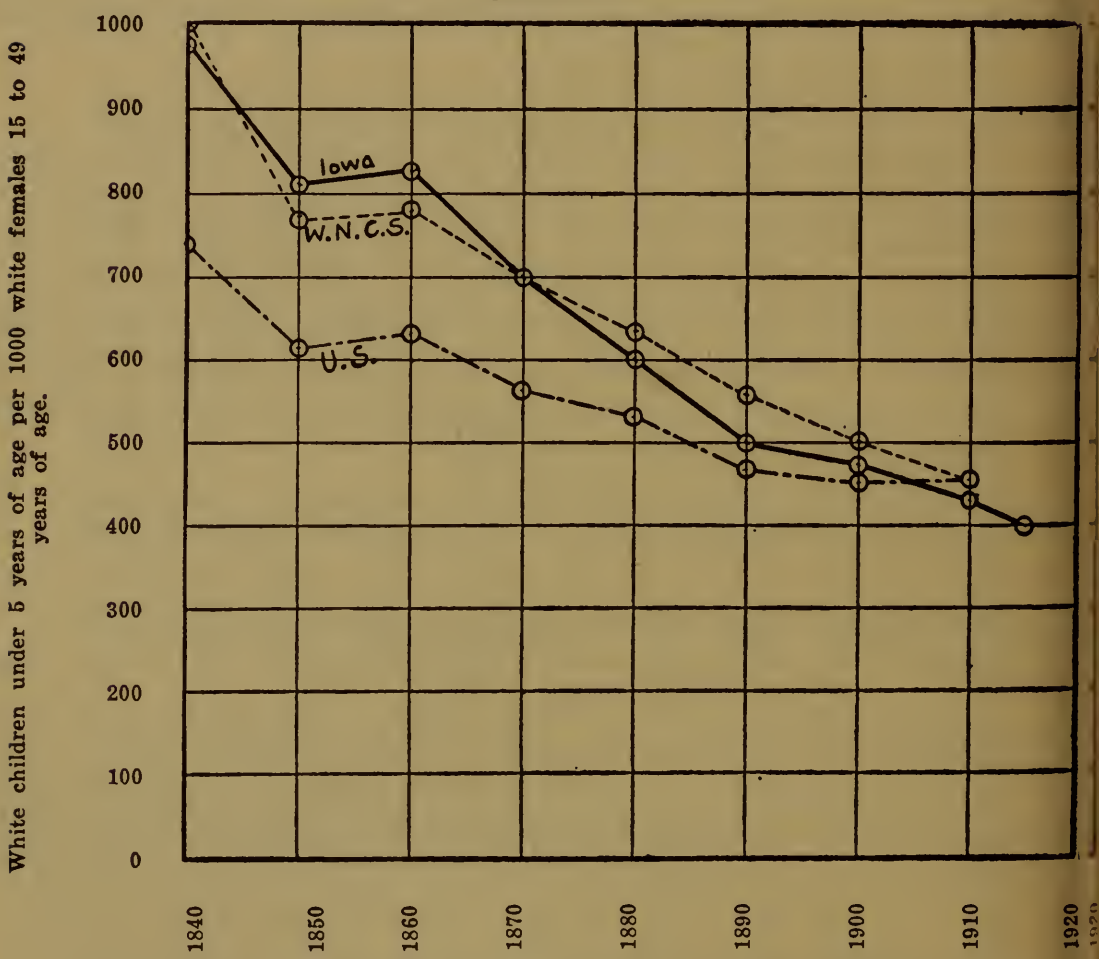
TABLE 41

Fecundity Indices in Iowa, the West North Central States and the United States

1840-1915. (*110*: p. lviii; *125*: pp. 303, 374; *129*: p. 18.)

Year	White children under five years of age per 1000 white females 15 to 49 years of age			Iowa index divided by United States index
	Iowa	West North Central States	United States	
1840	973	1003	744	1.31
1850	812	775	613	1.32
1860	822	788	627	1.31
1870	701	706	562	1.25
1880	602	636	537	1.12
1890	504	549	473	1.06
1900	478	505	465	1.03
1910	417	445	441	.96
1915	388			

CHART 17



DECREASE IN THE RELATIVE NUMBER OF CHILDREN IN IOWA

same general condition is evident in comparison with the West North Central group of states, of which Iowa is one. In 1850 and 1860 the censuses showed Iowa as being about five percent above this group of states as a whole in its fecundity index. Since 1860 Iowa has been below the rest of the division. In 1910 its index was about five percent smaller than that of the group as a whole.

The indices shown in Table 41 are crude ratios, uncorrected for differences in urban-rural and nativity distributions. A sounder comparison between Iowa and other parts of the United States may be gained, for the years 1890 and 1900, from Table 42. It

TABLE 42

RURAL-URBAN AND NATIVITY CONTRASTS IN FECUNDITY INDICES

White children under five years of age born of native women, per 1000 native white women 15 to 49 years of age, and white children under five years of age born of foreign-born women per 1000 foreign-born white women 15-49 years of age, in rural and in urban districts, in Iowa, the West-North Central States and the United States, 1890 and 1900. (*129*: pp. 24-27)

Type of territory and year	Iowa		West North Central		United States	
	Native women	Foreign women	Native women	Foreign women	Native women	Foreign women
Cities of 25,000 or over						
1890	337	637	353	631	309	565
1900	309	656	301	653	296	612
Smaller cities and rural territory						
1890	483	936	552	962	522	776
1900	470	1043	506	1085	522	841

will be noted that Iowa has a higher fecundity rate in its large cities than obtained in the large cities of the United States as a whole. This was true both in 1890 and 1900, and it was true of both native and foreign women. In smaller cities and rural districts the Iowa rate among native women was nine percent lower than the corresponding rate for the United States as a whole, but the foreign women in rural Iowa had a higher fecundity than foreign women in rural United States. Iowa therefore had a lower fecundity than the United States only among its native women in rural districts. This group, of course, forms 75 percent of the women of child-bearing age in the state.

It will be noted that the fecundity indices for foreign women were in general about twice as large as those for native women, and that the fecundity indices for foreign women increased be-

tween 1890 and 1900 in every group shown in Table 42, whereas the fecundity indices for native women decreased in every group except one in which there was no change. An investigation of the ratio between the number of white children of foreign or mixed parentage and the number of foreign-born white women indicates that the increase in foreign fecundity between 1890 and 1900 was merely a temporary phenomenon in Iowa, and that the number of white children of foreign parentage and the fecundity of foreign women both decreased continuously and rapidly from 1900 to 1915. In Iowa, therefore, especially in view of the relatively small proportion of foreign-born in the state, the danger that the recent immigrant stock will submerge the older native stock does not seem to be imminent.

The contrast between rural and urban territory shown in Table 42 demands further consideration. In every classification in that table rural fecundity is 35 to 75 percent higher than urban. This contrast is especially important in the present inquiry since the cities of Iowa are gaining through migration while the rural districts are losing. It is desirable to discover, therefore, whether the greater fecundity of the rural districts has persisted since 1900. Data comparable with Table 42 are not available for 1910 or 1915, but it is possible from the state census to calculate fecundity indices for rural and urban territory in Iowa in 1915. The results appear in Table 43. These indices are not comparable with those

TABLE 43

RURAL AND URBAN FECUNDITY IN IOWA IN 1915

(Sources of data *111*: pp. 2-417)

Type of territory	Women 21-44 years of age	Children under five years	Children per 1000 women
State of Iowa	415,984	237,760	571
Cities over 25,000	82,295	33,409	405
Cities 8,000 to 25,000	35,785	14,718	412
Rural areas	297,904	189,633	636

in previous tables since the ages of the women as given by the state census are from 21 to 44 instead of 15 to 49. Rural territory in Iowa in 1915 had a fecundity index 55 percent greater than urban territory. Small cities had a fecundity somewhat greater than large cities. An important incidental conclusion from Table 43 is that approximately 80 percent of Iowa children live in rural dis-

tricts or places under 8,000 population. The child welfare problem of Iowa is thus primarily a rural problem.

While it is beyond the scope of the present study to inquire into the causes for differential fecundity it may be worth while to present data bearing upon the question whether the decrease in fecundity and the differences between rural and urban territory may be due to changes in the age at marriage. This is done, for recent chronological changes, in Table 44. It will be noted that the percentage of women 15 to 44 years of age who are married has tended to increase slightly since 1890. The number of early marriages was higher in 1900 and 1910 than it was in 1890, while

TABLE 44

PERCENTAGES OF IOWA WOMEN OF VARIOUS AGES MARRIED 1890-1915
(Sources of data: *111*: p. 491; *121*: III p. 143; *123*: p. 272; *125*: p. 554.)

Ages	Percent married			
	1890	1900	1910	1915
15-44	56.5	56.6	56.7	58.0
15-19	6.7	8.0	7.8	
20-24	45.0	44.3	45.2	
25-34	79.7	76.1	75.5	
35-44	87.8	85.2	83.4	

the percentage married at ages over 25 decreased markedly in the later decades. The data of Table 44 definitely disprove the theory that the decrease in the fecundity of Iowa women is due to increasing postponement of marriage.

Urban women tend to marry later and to stay unmarried to a greater extent than do rural women. In 1910 the percentage of women 15-44 years of age in Iowa cities who were married was 52.7 as compared with 59.0 in the rural districts of Iowa (*125*: p. 604). This difference is too small to account for the greater fecundity of the rural districts. The tendency of foreign-born women to marry early is very marked. Among Iowa white women 15-44 years of age 77.9 percent of the foreign-born were married, as compared with 52.5 percent of the native-born of foreign parents and 55.9 of the native of native parents.

22. OTHER CHARACTERISTICS OF IOWA SETTLERS

Judged by the data used in the correlation studies of the characteristics of migrants, the early population of Iowa approximated fairly closely to the pioneer type. In the percentage of tall re-

cruits in the Civil War the state fell below what might have been expected, but in the proportion of big-chested men among the tall recruits its record was higher than might have been expected. Iowa furnished slightly more recruits than other states of similar density of population, and had a lower divorce rate than similar states. It had a somewhat larger number of journalists and of clergymen, and a somewhat smaller number of lawyers than comparable states. It produced about three-fourths as large a quota of men for Who's Who as the average of all the states, and had about half as large a proportion of authors, lecturers, librarians and painters as the average of all the states.

The sources from which Iowa was settled in the early years are shown in Table 45.

TABLE 45

EARLY SOURCES OF IOWA POPULATION

Birth-places of residents of Iowa in 1850 and 1860, with percentage distributions. Sources of data *116* pp. xxxvi, f.; *117* p. 156.

Places of birth	1850		1860	
	Number	Percent	Number	Percent
All places	192,214		674,913	
Iowa	50,380		191,148	
Other places than Iowa	141,834	100.0	483,765	100.0
Ohio	30,713	21.6	99,240	20.5
Indiana	19,925	14.1	57,555	11.9
Pennsylvania	14,744	10.4	52,156	10.8
New York	8,134	5.7	46,053	9.5
Illinois	7,247	5.1	26,696	5.5
Virginia	7,861	5.5	17,944	3.7
Kentucky	8,994	6.3	13,204	2.7
Other parts of the United States	22,622	16.0	64,836	13.4
Germany	7,152	5.0	38,555	8.0
Ireland	4,885	3.5	28,072	5.8
England	3,785	2.7	11,522	2.4
Other Foreign countries	5,410	3.8	27,932	5.8
Unknown	362	.3		

Of the original settlers of Iowa, as set forth in Table 45, more than half came from the four states of Ohio, Indiana, Pennsylvania and New York. Less than 20 percent came from places not specifically listed in that table. More than 40 percent of the settlers came from Kentucky, Illinois, Indiana and Ohio—states which themselves were frontier territory in the early part of the century. Even the migrants from seacoast states must have descended from stock which not more than a generation or two be-

for settled frontier territory. The pioneers of Iowa were therefore for the most part sons and daughters of pioneers.

The characteristics of the Iowa settlers as reported by the observers quoted are very similar to the characteristics of the settlers elsewhere on the frontier. Perhaps the most striking difference between the reports of Iowa pioneers and of those elsewhere is the frequency with which drinking, carousal and lawlessness are mentioned (*5*; *10*; *27 30*; *32*; *43*; *55*; *69*) as occurring in early Iowa days. Lack of refinement (*42*; *43*; *52*) is also noted rather more frequently than for other pioneers. On the other hand, Lieutenant Lea gives a directly contrary impression (*40.1*: pp. 14-15). The Iowa settlers were noted especially for hospitality, kindness, love of education, and tenacity in the face of discouragements (*4*; *11*; *27*; *42*; *44*; *52*; *54*; *62*). The settlement of Iowa was notable for the number of communistic and coöperative experiments attempted in its early days. The Amana Community (*57*), Icaria (*9*), and settlements by Trappists (*45*), Hollanders (*12*), Quakers (*39*), and Mormons (*6*) may be cited as examples of group colonization. In general the Iowa settlers were characterized by the same energy, vigor, intensity, disregard for inhibitions and capacity for coöperation which were outstanding characteristics of the American pioneers in general.

23. SELECTIVE CHARACTER OF EMIGRATION FROM IOWA

The fact that emigration from Iowa has included a disproportionate number of the potentially distinguished persons of the state is indicated by the fact that whereas 582 persons listed in Who's Who were born in Iowa, only 289 persons listed in that volume live in Iowa.

Similar conclusions are indicated by Cattell's data on American Men of Science:

> The rural New England States, Maine, New Hampshire and Vermont have lost 48 of the 62 scientific men whom they have produced. This is a loss which they can ill afford; it signified a distinct decadence. . . . The condtions in some of the North Central states are also ominous, though more likely to improve. Thus Ohio has lost 41 of its scientific men, more than half of those whom it has produced; Indiana has also lost more than half, and Iowa just half. (*104*).

24. SUMMARY OF CONCLUSIONS FROM CHAPTER IV

1. During the years 1900-1915 Iowa sustained a net emigration

of over 378,800 persons. This emigration was decidedly smaller in 1910-1915 than in the preceding 10 years, but the 1920 census indicates that emigration is again on the increase.

2. Over one-third of the persons born in Iowa are living in other parts of the United States, besides Iowans who have gone to Canada.

3. In its interstate migration Iowa has reached a condition comparable with that of the New England States.

4. Two-thirds of the emigrants from Iowa are young people 15-34 years of age.

5. Over one-fifth of the emigrants from Iowa went to cities of over 50,000 population. The movement of Iowa population is to the west, north-west, and south-west.

6. Rural Iowa has been losing population steadily since 1900.

7. Six large Iowa cities received a net native immigration of 51,200 in the years 1900-1915. This migration was larger in 1910-1915 than in previous pentads. Half of the migration to these cities occurred at the ages 15-25. Girls tend to go to cities at ages about two years younger than boys.

8. The number of children in Iowa per 1000 women of child-bearing age has dropped to 40 percent of what it was in 1840, and has been decreasing faster than corresponding indices for other parts of the United States. The change is not due to changes in the age at marriage.

9. The fecundity in the cities is about two-thirds as high as in rural districts of Iowa. The foreign-born are much more fecund than the native-born. These contrasts are partly but not chiefly explicable as due to differences in ages at marriage.

10. Iowa settlers were fairly typical pioneers, with the desirable qualities of the pioneer stock.

11. Emigration from Iowa includes a disproportionate percentage of the potentially distinguished persons born in the state.

V. CONCLUSIONS AND RECOMMENDATIONS

Interstate migration in the United States has not ceased with the disappearance of the frontier; it is going on at as rapid a rate as ever. Analysis of census data by the age-distribution method indicates that between 1900 and 1910 over 3,000,000 persons migrated from the rural districts in the United States to other countries, to western rural districts, and especially to cities, of the west and middle west. The West North Central States were among the heaviest losers through this migration. Returns for 1920 indicate that the movement has not slackened. These migrants are predominantly from the ages preceding marriage; most of them are potential parents.

Migration is a selective process which tends to pick out the energetic and able individuals and to leave behind the feebly motivated and inferior. As distinguished from older migration to the frontier, migration to cities apparently selects especially those potentially distinguished in intellectual pursuits. In the frontier days the pioneers reproduced much more rapidly than the less aggressive persons left behind; hence early migration was eugenic in its effects. Recent native migrants, with their cityward trend, tend to leave fewer children than the individuals left behind in the rural districts. Hence modern migration tends to be dysgenic an its effects.

Rural Iowa has sustained the emigration of over one-third of the individuals born in the state. Its condition in this respect now parallels that of the New England States whose rural districts have undergone very serious degeneration because of selective emigration. Over half of the individuals of distinction born in Iowa have moved elsewhere, in excess of compensating migration to the state.

Recommendations

The above conclusions indicate the need for wise action if conditions disastrous to the future children of Iowa are to be avoided. It is folly to assume that remedial social work for the defective, dependent and criminal is an adequate program when funda-

mental facts in the dynamics of population indicate the danger of a deterioration in racial stock such as will greatly increase the amount of defectiveness, dependency and delinquency, and at the same time decrease radically the number of aggressive social leaders in rural communities.

Two lines of action are indicated. The first is to seek to decrease the emigration by measures calculated to make rural Iowa attractive to the type of parents which it is desired to retain. Under this head would come measures counteracting the growth of farm tenancy, promoting the improvement of the quality of rural schools, the betterment of rural health conditions, and the increased introduction of modern conveniences and of cultural opportunities into rural districts (*140*; *152*). Movements of this sort are under way. Whether they will be able to stem the tide must be determined by impartial observation. It is open to serious question, however, whether society would gain by the retention in the rural districts of the individuals fitted for marked success in urban occupations.

A second line of action is the taking of measures calculated to counteract the dysgenic influence of emigration by a more rapid multiplication of desirable types of parents and less rapid multiplication of the undesirable. Personally the author believes that this is the more hopeful course.

Among the specific lines of inquiry clearly called for are the following:

1. Analysis of the 1920 census returns with a view to discovering in more detail the migratory tendencies of the past decade.
2. Intensive surveys of typical rural communities in Iowa with the special object of determining the character of recent migrants as compared with residuals and immigrants, and with a view to studying the nature and action of available counteractive agencies and movements.
3. The development of objective scientific methods for measuring the normal energy levels of different individuals. Such tests should be as technically sound as the best intelligence tests.
4. A study of the birth rates or fecundity indices of the various counties or smaller units of Iowa with a view to determining what are the conditioning factors of fecundity, and what types are reproducing most rapidly.

REFERENCES CITED

A. *Relating to the Character of the Pioneers.*

1. Adney, T., *Klondike Stampede.* New York: Harper & Bros., 1900, 267-273.
2. Allison, J., *Dropped Stitches in Tennessee History.* Nashville: Marshall & Bruce., 1897, 16-20.
3. Barrows, W., *Oregon.* Boston: Houghton, Mifflin, 1896, 43, 80, 81, 239, 240, 246.
4. Barrows, W., History of Scott County, Iowa. *Ann. of Iowa* s. 1., 1863, (I), 8ff., 24, 61, 64.
5. Black, P. W., Lynchings in Iowa. *Iowa J. of Hist. and Pol.,* 1912, (X), 151-254.
6. Bloomer, D. C., History of Pottawattomie County. *Ann. of Iowa* s. 1., (X), 186.
7. Browne, W. H., *Maryland.* Boston: Houghton, Mifflin, 1895, 42-53.
8. Byers, S. H. M., Out West in the Forties. *Iowa Hist. Rec.* (4-6), 367ff.
9. Cabet, E., History of Colony or Republic of Icaria in U. S. of America. *Iowa J. of Hist. and Pol.,* 1917, (XV), 214ff.
10. Campbell, I. R., Recollections of the Early Settlement of Lee County. *Ann. of Iowa.* s. 1., (I), 891, 895.
11. Carroll, G. R., *Pioneer Life in and Around Cedar Rapids.* Cedar Rapids: Times Print. & Bind. Co., 1895, 34ff., 227.
12. Cole, C., Pella, a Bit of Holland in America. *Ann. of Iowa.* S. 3 (III), 241ff.
13. Cooley, T. M., *Michigan.* Boston: Houghton, Mifflin, 1886.
14. Coolidge, L. A., *Klondike and the Yukon.* Philadelphia: H. Altemus, 1897, 70-73.
15. Davenport, C. B., *Heredity in Relation to Eugenics.* New York: Henry Holt, 1913, 63-64, 209-212.
16. De Windt, H., *Through the Gold Fields of Alaska to Bering Strait.* London: Harper & Bros., 1898.
17. Donnel, W., Pioneers of Marion County. *Ann. of Iowa,* s. 1. 1870, (VII), 120.
18. Doyle, J. A., *English Colonies in America.* New York: Henry Holt, 1882, (I), 380.
19. Drake, S. A., *Making of the Great West.* New York: C. Scribner's, 1887, 215-218.
20. Dunn, J. P., *Indiana.* Boston: Houghton, Mifflin, 1888, 85-99, 129.
21. Fiske, J., *Beginnings of New England.* Boston: Houghton, Mifflin, 1889, 140-147, 154.
22. Fiske, J., *Old Virginia and Her Neighbors.* Boston: Houghton, Mifflin, 1897, (II), 30, 35, 185-188.

23. Flint, J., *Letters from America.* Edinburgh, W. & C. Tait, 1822, 141-268.
24. Flint, T., *Geography and History of the Western States.* Cincinnati: E. H. Flint, 1828, 206-223, 567-568.
25. Garrison, G. P., *Westward Extension,* New York: Harper 1906, 5-8.
25.1 Gill, C. O. and Pinchot, Gifford, *6,000 Rural Churches.* New York: Macmillan, 1919. pp. 12-24.
26. Greene, E. B., *Provincial America.* New York: Harper, 1905, 231-232, 253, 259.
27. Gue B., *History of Iowa.* New York: Century History Co., 1903, 158, 197-198, 221, 384.
28. Hall, J., *Sketches of History, Life and Manners in the West.* Philadelphia: H. Hall, 1835, 54-96.
29. Hittell, T., *History of California.* San Francisco: N. J. Stone, 1897, (III), 162-182, 202.
30. Herriott, F. L., Whence Came the Pioneers of Iowa. *Ann. of Iowa.* s. 3 (VII), 376.
31. Herriott, F. I., Nativity of the Pioneers of Iowa. *Iowa Off. Reg.,* 1911-1912, 2-15.
32. Holbrook, J. C., History of the Congregational Church at Dubuque, *Ann. of Iowa,* s. I. 1864, (II), 314.
33. Hough, E., *Story of the Cowboy.* New York: D. Appleton, 1897, 221-294.
34. Hough, E., *Way to the West.* Indianapolis: Bobbs-Merrill, 1903, 74-219.
35. Hyde, A. E., Old Regime in the Southwest. *Cent. Mag., (41),* 690ff.
36. Irving, W., *Astoria.* Philadelphia: 1841, 2, 16.
37. Irving, W., *Rocky Mountains.* Philadelphia: Carey, Lee, and Blanchard, 1837, 26, 27, 32, 33.
38. Johnston, A., *Connecticut.* Boston: Houghton Mifflin, 1887, 19-24, 64, 70, 83-85, 251.
39. Jones, L. T., *Quakers of Iowa.* Iowa City: State Hist. Soc., 1914, 40ff.
40. King, R., *Ohio.* Boston: Houghton, Mifflin, 1888, 191-309.
40.1 Lea, A. M., *Notes on the Wisconsin Territory.* Philadelphia: Henry S. Tanner, 1836.
41. Matthews, L. K., *Expansion of New England.* Boston: Houghton, Mifflin, 1909.
42. Negus, C., Early Times in Iowa. *Ann. of Iowa,* s. 1. 1872, (X), 161ff.
43. Oldt, F. T., *History of Dubuque County, Iowa.* Chicago: Goodspeed Hist. Assn., 49.
44. Parvin, T. S., Glimpses of Early Iowa. *Iowa Hist. Rec.,* 1892, (VII), 281.
45. Perkins, W. R., *Trappist Abbey of New Melleray.* Iowa City: University of Iowa Publication, 1892, 36ff.

46. Phillips, U. B., *A Documentary History of American Industrial Society.* Cleveland: A. H. Clark, 1910. (I, II).
47. Reding, G., Western Heroines. *Cist's Cincinnati Advertizer.* April, August, and September, 1845.
48. Roberts, E. H., *New York.* Boston: Houghton, Mifflin, 1904, 35, 36, 62.
49. Robinson, R. F., *Vermont.* Boston: Houghton, Mifflin, 1892, 49-88.
50. Roosevelt, T., Frontier Types. *Cent. Mag.*, (14), 832, 835.
51. Roosevelt, T., *Winning the West.* New York: G. P. Putnam's 1896.
52. Rouse, C. B., *Iowa Leaves.* Chicago: Ill. Print. & Bind., 1891, 53, 57ff.
53. Royce, J., *California.* Boston: Houghton, Mifflin, 1886.
54. Sabin, H., *Making of Iowa.* Chicago: A. Flanagan, 1900, 160ff.
55. Salter W., *Iowa: First Free State in the Louisiana Purchase.* Chicago: A. C. McClurgh, 1905, 180.
56. Shaler, N. S., *Kentucky.* Boston: Houghton, Mifflin, 1885.
57. Shambaugh, B. M. H., *Amana: Community of True Inspiration.* Iowa City: State Hist. Soc., 1908, 77ff.
58. Shinn, C. H., *Mining Camps.* New York: C. Scribner, 1885.
59. Spring, L. W., *Kansas.* Boston: Houghton, Mifflin, 1885, 26, 34, 36.
60. Taylor, H., *Iowa Hist. Rec.*, 1886, (II), 295.
61. Taylor, H., From the Standpoint of a Pioneer. *Iowa Hist. Rec.*, (14), 311ff.
62. Taylor, H., Random Recollections. *Ann. of Iowa*, 1872, (10), 148.
63. Taylor, H., Squatters and Speculators at the First Land Sale. *Ann. of Iowa*, s. 1. 1870, 270.
64. Toole, W. L., History of Louisa County. *Ann. of Iowa.* s. 1. 1870, (8), 345.
65. Turner, F. J., The Old West. *Proc. Wis. Hist. Soc.*, 1908, 184-233.
66. Turner, F. J., Problem of the West. *Atl. Mo.* (78), 289.
67. Turner, F. J., *Rise of the New West.* New York: Harper, 1906, 68, 92, 116.
68. Turner, F. J., Significance of the Frontier in American History. *Proc. Wis. Hist. Soc.*, 1893, 111, 112.
69. Tuttle, C. R., *An Illustrated History of the State of Iowa.* Chicago: Charles S. Peale, 1876, 87, 223.
70. Woods, S. D., *Lights and Shadows of Life on the Pacific Coast.* New York: Funk & Wagnalls, 1910, 9.
71. Zeller, N., Big Bottom or North Bend of the Iowa River. *Ann. of Iowa.* s. 1. 1871, (9), 429.

B. *Descriptions of the Character of Residual New Englanders.*

72. Andress, J. M., Solving Country Life Problems in Massachusetts. *Educ.*, 1914, (35), 91ff.

73. Briggs, H. A. M., Rural Reconstruction—Experience in a Massachusetts Community. *Educ.* 1916, (36), 657ff.
74. Burdick, C. A., Rural Wreckage in New England. *New Eng. Mag.*, 1912, (46), 16-21.
75. Carlton, F. T., Growth of Rural Population. *Pop. Sci.* 1903, (64), 177-81.
76. Cance, A. E., Decline of Rural Population of New England. *Proc. of the Amer. Stat. Assn.*, 1912, (13), 96-101.
77. Deming, C., Farm Unrest in New England. *Yale Rev.* (1), 291ff.
78. Currier A. N., Decline of Rural New England. *Pop. Sci. Mo.*, 1891, (38), 384ff.
79. Hall, C .N., Our Country Towns. *New Eng. Mag.*, 1900, (23), 50-55.
80. Hartt, R. L., Barbarism in Maine. *New Eng. Mag.*, 1906, (33), 542-5.
81. Hartt, R. L., Rural Regeneration of New England. *Outlook*, 1900, (64), 504, 577, 628, 745.
82. Howard, E., Decay of Churches in New England. *Nation*, 1886, (43), 367ff.
83. Howard, J. R., Social Problems of Rural New England. *Proc. Nat. Conf. Char. and Corr.*, 1911, 416-20.
84. Morgan, P., Problems of Rural New England—A Remote Village. *Atl. Mo.*, 1897, (79), 577ff.
85. Robinson, A. G., Notes of a Returned New Englander. *Ind.*, 1902, (54), 1831ff.
86. Rolling, F. W., Renaissance of New England. *Ind.*, 1901, (53), 69ff.
87. Ross, E. A., *Changing America.* New York: Century Co., 1912, 146-156.
88. Sanborn, A. F., Future of Rural New England. *Atl. Mo.*, 1897, (80), 74ff.
89. Smyth, N., Political Corruption in Connecticut. *Outlook*, 1905, (79), 690-5.
90. Steffens, L., Darkest New England. *Lit. Dig.*, 1914, (48), 811-812.
91. Vallandigham, E., What Ails New England? *Putnam's Mo.* 1909, 6, 719-24.
92. Ward, J. H., Revival of our Country Towns. *New Eng. Mag.* 1889, 242ff.
92.1 Woods, Erville B., Heredity and Opportunity. *Amer. J. of Soc.* 1920, (24), 9.
93. Winship, A. E., Are Massachusetts Country Towns Degenerating? *New Eng. Mag.*, 1900, (22), 654-8.

C. *Descriptions of the Character of the American People as a Whole.*

94. Bose, S., American Impressions of a Hindu Student. *Forum*, 1915, (53), 251-7.
95. Kingston, G., Some Impressions in America. *Liv. Age*, 1916, (289), 259-66.

96. Münsterberg, H., *The Americans.* New York: McClure Phillips, 1914, 3, 7, 229, 234, 235, 362.
96.1 Nevinson, H. W., The Seed of the Mayflower. *Lond. Nat.* 1920, (27), 550-1.
97. Rodrigues, G., *The People of Action.* New York: Scribners, 1918, xxiii, 28, 37, 48, 56, 57, 58.
98. Santayana, G., Materialism and Idealism of America. *Liv. Age,* 1919, 300, 589ff.
99. Smart, G. T., *The Temper of the American People.* Boston: Pilgrim Press, 1912, 119-137.
99.1 Steiner, E. A., Herr Director and the American Spirit. *Outlook,* 1916, 111, 433.
100. Tong, H. K., China vs. America. *Ind.,* 1915, (82), 117ff.
101. Woods, E. A., American Extravagance a National Problem. *Sci. Mo.,* 1916, (2), 405ff.

D. *Statistical Data Relating to American Migration.*

102. Baxter, J. H., *Statistics, Medical and Anthropological, of the Provost Marshall General's Bureau:* Washington: Gov. Print. Off., 1875, 63ff.
103. Fox, W. F., *Regimental Losses in the American Civil War.* Albany: Albany Pub. Co., 1889, 526-529.
104. Cattell, J. McK., *A Statistical Study of American Men of Science,* New York: 1906, (24), 732ff.
105. Davies, G. R., *Social Environment.* Chicago: McClurg, 1917, 88-119.
106. Glover, J. W., *United States Life Tables* 1910. Washington Gov. Print. Off., 1916, 26-28, 38-45.
107. Hoffman, F. L., Articles on Homicide. *N. Y. Spectator.* Quoted *Curr. Lit.,* 1912, (53), 493.
108. Hopkins, J. C., *Can. Rev.,* 1913. Toronto: Ann. Rev. Pub. Co., 1914, 98.
109. *Iowa State Census 1895.* Des Moines: State Printer, 1896, 243.
110. *Iowa State Census 1905.*
111. *Iowa State Census 1915.*
112. *Iowa State Dept. of Pub. Instr. Bien. Rep.* Des Moines: State Printer, 1908-10, 14; 1911-12, 28-160; 1912-14, 41, 203; 1914-16, 19, 157; 1916-18, 75, 225; and a letter dated Feb. 19, 1920.
113. Marquis, A. N., *Who's Who in America.* Chicago: A. N. Marquis, 1920, 25, 26ff.
114. *Mo. Lab. Rev.,* 1920, (X), 571.
115. Nearing, S., The Geographical Distribution of American Genius. *Pop. Sci. Mo.,* (85), 189ff.; *Sci. Mo.,* 1914. 2, 48ff.
116. *U. S. Census for 1850.* Washington: Public Printer, 1853.
117. *U. S. Census for 1860.* Volume on Population.
118. *U. S. Census for 1860,* (I).
119. *U. S. Census for 1870,* (II), 575ff.
120. *U. S. Census for 1880,* (I).

121. *U. S. Census for 1890,* (I).
122. *U. S. Census for 1900,* (I).
123. *U. S. Census for 1900,* (II).
124. *U. S. Sensus for 1900,* (III), lxxix, lxxxii, ff.
125. *U. S. Census for 1910,* (I).
126. U. S. Bur. of the Census. *Marriage and Divorce 1867-1906.* Washington: Gov. Print. Off., 1909, 16, 19.
127. *Vital Statistic,* Washington: Gov. Print. Off., 1915; 1916, 114ff; 1917, 126ff.
128. *U. S. Com. Gen. of Imm., Ann. Rep.,* 1919. Washington: Gov. Print. Off., 1919. 168-9, 176 and Chart 1.
129. Wilcox, W. F., *Proportion of Children in the United States.* Washington: Gov. Print. Off., 1905, 17-18.

E. *Miscellaneous References.*

130. Baker, R. S., *Following the Color Line.* New York: Doubleday Page and Co., 1908, 160ff.
131. Boas, F., Changes in Bodily Form of Descendants of Immigrants. *Rep. of the Immig. Com.* 38, Washington: Gov. Print. Off., 1911, 56.
132. Bryce, J., *American Commonwealth.* New York: Macmillan, 1919, 892.
133. Bryce, J., *South America.* New York: Macmillan, 1912, 443, 504, 584.
134. Clarke, E., Contributions to Urban Growth. *Pub. Amer. Statis. Assn.,* 1915, (14), 654ff.
135. Clemenceau, G., *South America of Today.* New York: Putnam, 1911, 84-5, 92.
136. Crowder, E. H., *The Spirit of Selective Service.* New York: Century Co., 1920, 90.
137. Dickerman, G. S., The Drift to the Cities. *Atl. Mo.,* 1913, (112), 349-53.
138. Gillette, J. M., The Drift to the City in Relation to the Rural Problem. *Amer. J. of Sociol.,* 1911, (16), 645ff.
139. Gillette, J. M., A Study in Social Dynamics. *Pub. Am. Statis. Assn.,* 1916, (15), 345ff; (14), 642ff.
140. Groves, E. R., Psychological Causes of Rural Migration. *Am. J. of Sociol.,* 1916, 21, 623ff.
141. Holt, E. B., The Physiology of Nerve and Muscle. *Psychol. Bul.,* 1920, (17), 145-161.
142. Jefferson, M., A Hopeful View of the Urban Problem. *Atl. Mo.,* 1913, (112), 353-58.
143. Johnson, E. R., *American Railway Transportation.* New York: D. Appleton, 1914, 24-27.
144. Le Bon, G., *Psychology of Peoples.* New York: Macmillan, 1898, 140-150.
145. Longstaff, G. B., *Studies in Statistics.* London: E. Stanford, 1891, 25.
146. Moore, A. M., Negro and White Man. *Survey,* 1920, (44), 242.

147. Pyle, W. H., and Collings, P. E., The Mental and Physical Development of Rural Children. *Sch. and Soc.*, 1918, (8), 534ff.
148. Ripley, W. Z., *The Races of Europe.* New York: D. Appleton and Co., 1899, 536-558.
149. Robinson, J. H., and Beard, C. A., *Development of Modern Europe.* Boston: Ginn and Co., 1907, (I), 28-29.
150. Ross, E. A., *Principles of Sociology.* New York: Century, 1920, 13-26.
151. Tuttle, T. D., Death Rates in Old and Young States. *Am. J. of Pub. Health,* 1917, (7), 359ff.
152. Vogt, P. L., *Introduction to Rural Sociology.* New York. New York: Appleton, 1917, 140-155.
153. Wood, F., American Men of Science and the Question of Heredity. *Sci.*, 1909, (30), 209.
154. Woods, E. B., Heredity and Opportunity. *Amer. J. of Sociol.* 1920, (26), 1ff.
155. Yoakum, C., and Yerkes, R., *Army Mental Tests.* New York: H. Holt, 1920, 196-200.
156. Yule, G. U., *An Introduction to the Theory of Statistics.* Philadelphia: J. B. Lippincott, 1912, 204-207.